5.5 NOISE

The purpose of this section is to analyze project-related noise impacts. This section evaluates short-term construction-related impacts, as well as future buildout conditions. Information in this section was obtained from the *Huntington Beach General Plan* (*General Plan*) and the City of Huntington Beach *Municipal Code* (*Municipal Code*). For the purposes of mobile source noise impacts, traffic information contained in the *Brookhurst Street/Adams Avenue Improvement Project Traffic Impact Analysis* (*Traffic Impact Analysis*) (April 11, 2013), prepared by RBF Consulting was utilized, as well as the *Brookhurst Street and Adams Avenue Intersection Improvements, CC-1377 Project Report* (Project Report) prepared by Harris & Associates, March 12, 2013; refer to Appendix 13.3, *Traffic Impact Analysis*. Also refer to Appendix 13.5, *Noise Data*, for noise modeling data discussed in this section.

5.5.1 EXISTING SETTING

NOISE SCALES AND DEFINITIONS

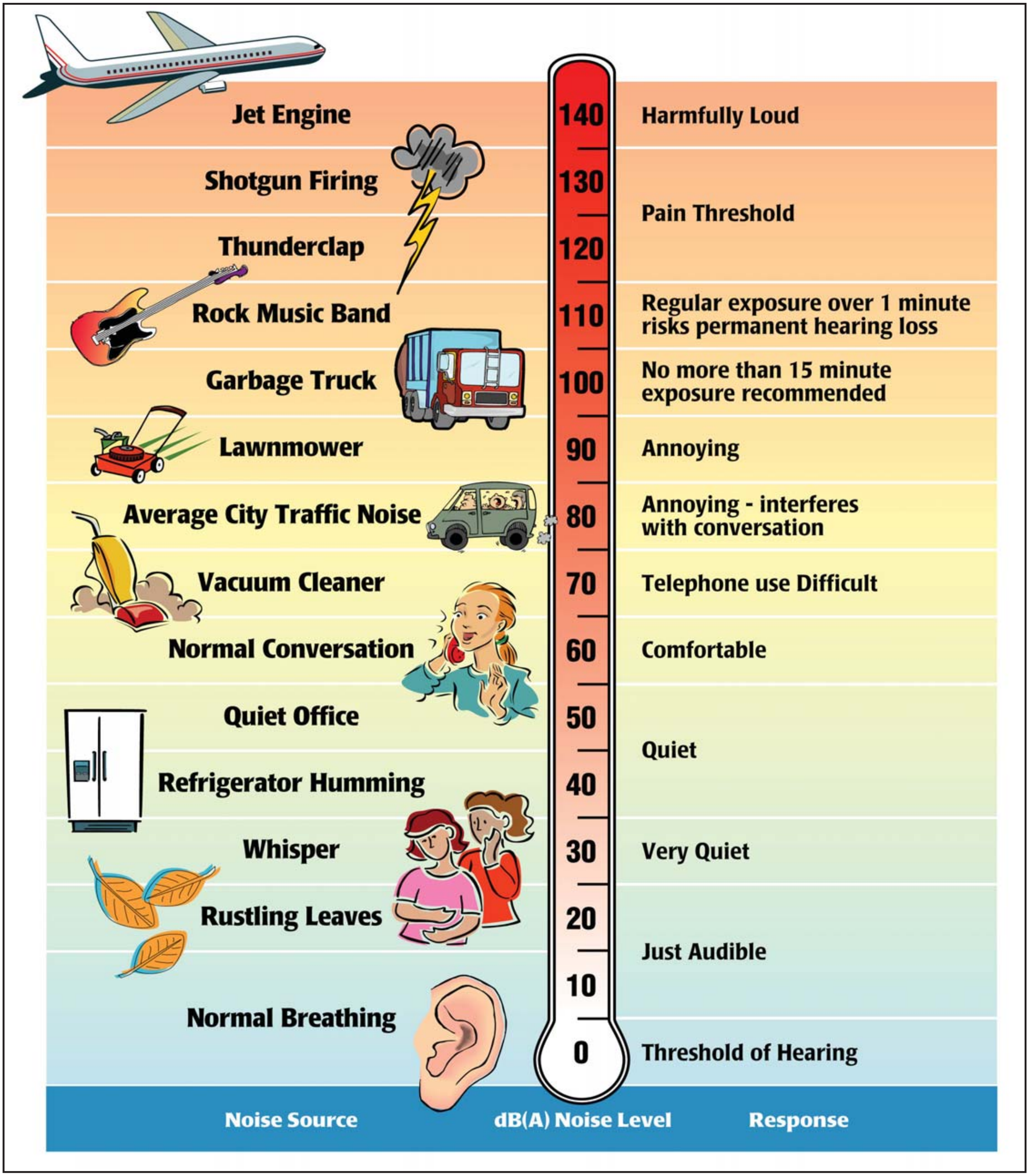
Sound is described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud, and 20 dBA higher four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are illustrated on Exhibit 5.5-1, *Sound Levels and Human Response*.

Many methods have been developed for evaluating community noise to account for, among other things:

- The variation of noise levels over time;
- The influence of periodic individual loud events; and
- The community response to changes in the community noise environment.

Numerous methods have been developed to measure sound over a period of time; refer to Table 5.5-1, *Noise Descriptors*.



Source: Melville C. Branch and R. Dale Beland, *Outdoor Noise in the Metropolitan Environment*, 1970.
Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA/ONAC 550/9-74-004), March 1974.

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Sound Levels and Human Response

Exhibit 5.5-1

Table 5.5-1
Noise Descriptors

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (L_{eq})	The sound level containing the same total energy as a time varying signal over a given time period. The L_{eq} is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (L_{max})	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (L_{min})	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 PM to 10:00 PM, and +10 dBA for the night, 10:00 PM to 7:00 AM.
Day/Night Average (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq}. The L_{dn} is calculated by averaging the L_{eq}'s for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM), by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
Exceedance Level (L_n)	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% (L_{01}, L_{10}, L_{50}, L_{90}, respectively) of the time during the measurement period.

Source: Cyril M. Harris, *Handbook of Noise Control*, 1979.

HEALTH EFFECTS OF NOISE

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. The percentage of people claiming to be annoyed by noise generally increases with the environmental sound level. However, many factors also influence people's response to noise. The factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence people's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses will range from "not annoyed" to "highly annoyed."

When the noise level of an activity rises above 70 dBA, the chance of receiving a complaint is possible, and as the noise level rises, dissatisfaction among the public steadily increases. However, an individual's reaction to a particular noise depends on many factors, such as the source of the sound, its loudness relative to the background noise, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community.

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

- Noise-Induced Hearing Loss;
- Interference with Communication;
- Effects of Noise on Sleep;
- Effects on Performance and Behavior;
- Extra-Auditory Health Effects; and
- Annoyance.

Although it often causes discomfort and sometimes pain, noise-induced hearing loss usually takes years to develop. Noise-induced hearing loss can impair the quality of life through a reduction in the ability to hear important sounds and to communicate with family and friends. Hearing loss is one of the most obvious and easily quantified effects of excessive exposure to noise. While the loss may be temporary at first, it could become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly caused by the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, substantial damage can be caused by non-occupational sources.

According to the United States Public Health Service, nearly ten million of the estimated 21 million Americans with hearing impairments owe their losses to noise exposure. Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools, and can cause fatigue and vocal strain in those who need to communicate in spite of the noise.

Interference with communication has proved to be one of the most important components of noise-related annoyance. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high and the task sufficiently complex for effects on performance to occur.

Recent research indicates that more moderate noise levels can produce disruptive after-effects, commonly manifested as a reduced tolerance for frustration, increased anxiety, decreased incidence of "helping" behavior, and increased incidence of "hostile" behavior. Noise has been implicated in the development or exacerbation of a variety of health problems, ranging from hypertension to psychosis. As with other categories, quantifying these effects is difficult due to the amount of variables that need to be considered in each situation. As a biological stressor, noise can influence the entire physiological system. Most effects seem to be transitory, but with continued exposure some effects have been shown to be chronic in laboratory animals.

Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse health effects, as discussed above. In a study conducted by the United States Department of Transportation, the effects of annoyance to the community were quantified. In areas where noise levels were consistently above 60 dBA CNEL, approximately nine percent of the community is highly annoyed. When levels exceed 65 dBA CNEL, that percentage rises to 15 percent. Although evidence for the various effects of noise have differing levels of certainty, it is clear that noise can affect human health. Most of the effects are, to a varying degree, stress related.

GROUND-BORNE VIBRATION

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. 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 or vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response. Typically, ground-borne vibration, generated by man-made activities, attenuates rapidly with distance from the source of vibration. Man-made vibration issues are therefore usually confined to short distances (i.e., 500 feet or less) from the source.

Both construction and operation of development projects can generate ground-borne vibration. In general, demolition of structures preceding construction generates the highest vibrations. Construction equipment such as vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible vibration during construction activities. Heavy trucks can also generate ground-borne vibrations that vary depending on vehicle type, weight, and pavement conditions.

SENSITIVE RECEPTORS

Human response to noise varies widely depending on the type of noise, time of day, and sensitivity of the receptor. The effects of noise on humans can range from temporary or permanent hearing loss to mild stress and annoyance due to such things as speech interference and sleep deprivation. Prolonged stress, regardless of the cause, is known to contribute to a variety of health disorders. Noise, or the lack of it, is a factor in the aesthetic perception of some settings, particularly those with religious or cultural significance. Certain land uses are particularly sensitive to noise, including schools, hospitals, rest homes, long-term medical and mental care facilities, and parks and recreation areas. Residential areas are also considered noise sensitive, especially during the nighttime hours.

Existing sensitive receptors located in the project vicinity include single and multi-family residential homes, schools, parks, places of worship and a hospital. Sensitive receptors are reference below in Table 5.5-2, *Sensitive Receptors*.

Table 5.5-2
Sensitive Receptors

Type	Name	Distance from Project Site (miles)	Direction from Project Site
Residential	Residential Uses	Adjoining	North
		Adjoining	South
		Adjoining	East
		Adjoining	West
Schools/Churches	Isojiro Oka Elementary School	0.24	Northwest
	Pegasus School	0.36	East
	Adams Elementary School	0.98	East
	Preschool Academy Huntington Beach	0.30	South
	Huntington Beach Christian School	0.66	Southeast
	Ralph E. Hawes Elementary School	0.30	Southeast
	Isaac L. Sowers Elementary School	0.80	Southeast
	Sts. Simon and Jude School (Sts. Simon and Jude Church)	0.74	Southeast
	Christ Presbyterian Preschool (Christ Presbyterian Church)	0.70	West
	William T. Newland School	0.98	West
	Samuel E. Talbert Middle School	0.82	West
Parks	Bushard Park	0.27	Northwest
	Arevalos Park	0.44	East
	Estancia Park	0.56	East
	Costa Mesa Golf Course	0.96	East
	Fairview Park	0.43	Southeast
	Lebard Park	0.30	South
	Burke Park	0.57	Southeast
	Hawes Park	0.28	Southeast
	Sowers Park	0.80	Southeast
	Wardlow Park	0.73	West
	Lagenbeck Park	0.94	Northwest

Source: Google Earth, 2013.

AMBIENT NOISE MEASUREMENTS

Short-Term Noise Measurements

In order to quantify existing ambient noise levels in the project area, RBF Consulting conducted five short-term noise measurements on April 11, 2013; refer to Table 5.5-3, *Short-Term Noise Measurements*. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the project site; refer to Exhibit 5.5-2, *Noise Measurement Locations*. Fifteen-minute measurements were taken at each site, between approximately 10:00 AM and 12:00 PM.

Meteorological conditions were clear skies, warm, with light wind speeds (0 to 5 miles per hour), and low humidity.

Table 5.5-3
Short-Term Noise Measurements

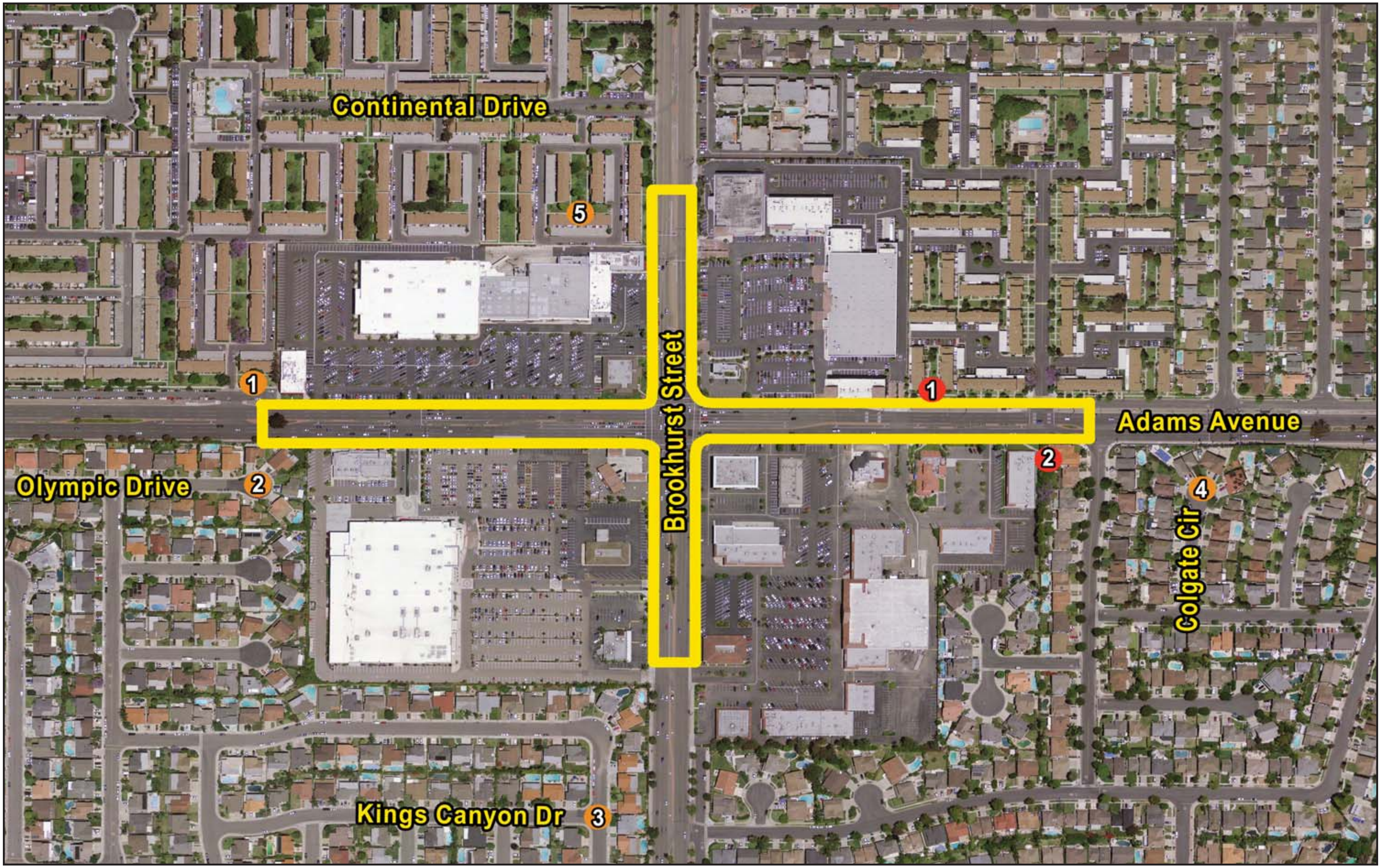
Site No.	Location	Leq (dBA)	Lmin (dBA)	Lmax (dBA)	Peak (dBA)	Time
1	Huntington Continental Apartments, along Adams Avenue	65.2	44.6	81.0	99.8	10:17 AM
2	Park Huntington neighborhood, within the Olympic Drive cul-de-sac	49.2	39.9	75.2	96.8	10:38 AM
3	Park Huntington neighborhood, along Running Springs Lane near Mammoth Drive	53.0	42.7	72.4	95.8	10:59 AM
4	Meredith Gardens neighborhood, within Colgate Circle	57.2	42.2	85.0	93.6	11:21 AM
5	Huntington Continental Apartments, near Kingswood Lane	52.7	44.2	73.7	98.1	11:44 AM

Source: RBF Consulting, April 11, 2013.

Noise monitoring equipment used for the short-term ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a 4189 pre-polarized freefield microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute for Type I (precision) sound level meters. The results of the field measurements are indicated in Appendix 13.5, *Noise Data*. Existing measured noise levels range from approximately 49.2 dBA to 65.2 dBA.

Long-Term Noise Measurements

Long-term (24-hour) noise measurements were taken at the Huntington Bay residential complex and at the rear yard of 20011 Lawson Lane; refer to Exhibit 5.5-2. The results of the long-term noise measurements are provided in Table 5.5-4, *Long-Term Noise Measurements*. The long-term measurements were taken between 11:00 AM March 25, 2013 and 12:00 PM March 26, 2013.



Source: Google Maps, 2012.
- Project Site
- LT= Long-Term Measurement
- ST = Short-Term Measurement

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ENVIRONMENTAL IMPACT REPORT
BROOKHURST STREET/ADAMS AVENUE INTERSECTION IMPROVEMENTS

Noise Measurement Locations

Exhibit 5.5-2

Table 5.5-4
Long-Term Noise Measurements

Site No.	Location	Leq (dBA)	Lmin (dBA)	Lmax (dBA)	Peak (dBA)	L_{25}	L_{50}	L_{90}
1	Huntington Bay – 680 feet east of the Brookhurst Street Centerline and 100 feet from the Adams Avenue Centerline.	63.7	45.5	74.4	93.8	65.2	62.4	53.9
2	20011 Lawson Lane – 10 feet from the wall adjacent to Adams Avenue.	59.0	43.9	70.8	100.4	60.4	57.1	49.9
Source: Long-term noise measurements conducted by Wieland Acoustics, March 25 and 26, 2013; refer to Appendix 13.5, *Noise Data*.								

Huntington Bay. The measurement was obtained with a Larson Davis Model 870 environmental noise monitor, set to slow response, and calibrated with a Larson Davis Model CAL250 calibrator. The measurement was on the grassy area between Units 10162 and 10163, about 16 feet back from the edge of the grass nearest to the frontage street, and approximately 10 inches from the edge of the grass nearest to the path.

20011 Lawson Lane. The measurement at the rear yard of 20011 Lawson Lane was obtained with a Larson Davis Model 820 integrating sound level meter and calibrated with a Larson Davis Model CAL250 calibrator. The rear yard measurement was obtained in the center of the yard 10 feet back from the wall adjacent to Adams Avenue; refer to Exhibit 5.5-2. To determine the difference in noise levels between the front and rear yards, a short-term measurement in the front yard was obtained with a Larson Davis Model 824 integrating sound level meter and calibrated with a Larson Davis Model CAL250 calibrator. The front yard measurement was obtained on the lawn 25 feet from the house. The short-term front yard measurement was obtained during the 11:00 AM to 12:00 PM hour and the measured Leq was 66.0 dBA. This correlates with an Leq of 59.0 dBA measured simultaneously in the rear yard.

MOBILE SOURCES

The Federal Highway Administration (FHWA) Traffic Noise Model (TNM) 2.5 model was used to evaluate traffic noise levels at noise-sensitive receptor locations in the project vicinity as the model can account for the large topographic changes in the project area. The TNM 2.5 program is the traffic noise model used to evaluate traffic noise impacts against the City's standards. The existing noise levels were calculated using Average Daily Traffic (ADT) volumes obtained from the *Brookhurst Street/Adams Avenue Improvement Project Traffic Impact Analysis* (*Traffic Impact Analysis*) (April 11, 2013), prepared by RBF Consulting. Additionally, other site specific parameters, including roadway and receptor elevation, vehicle speed, and fleet mix were included in TNM 2.5 to calculate traffic noise levels. The locations of the modeled sensitive receptors are depicted in Exhibit 5.5-3 through Exhibit 5.5-6, *Modeled Receptor Locations*.

- Existing Right-of-Way
- Proposed Right-of-Way
- Modeled Receptor Location

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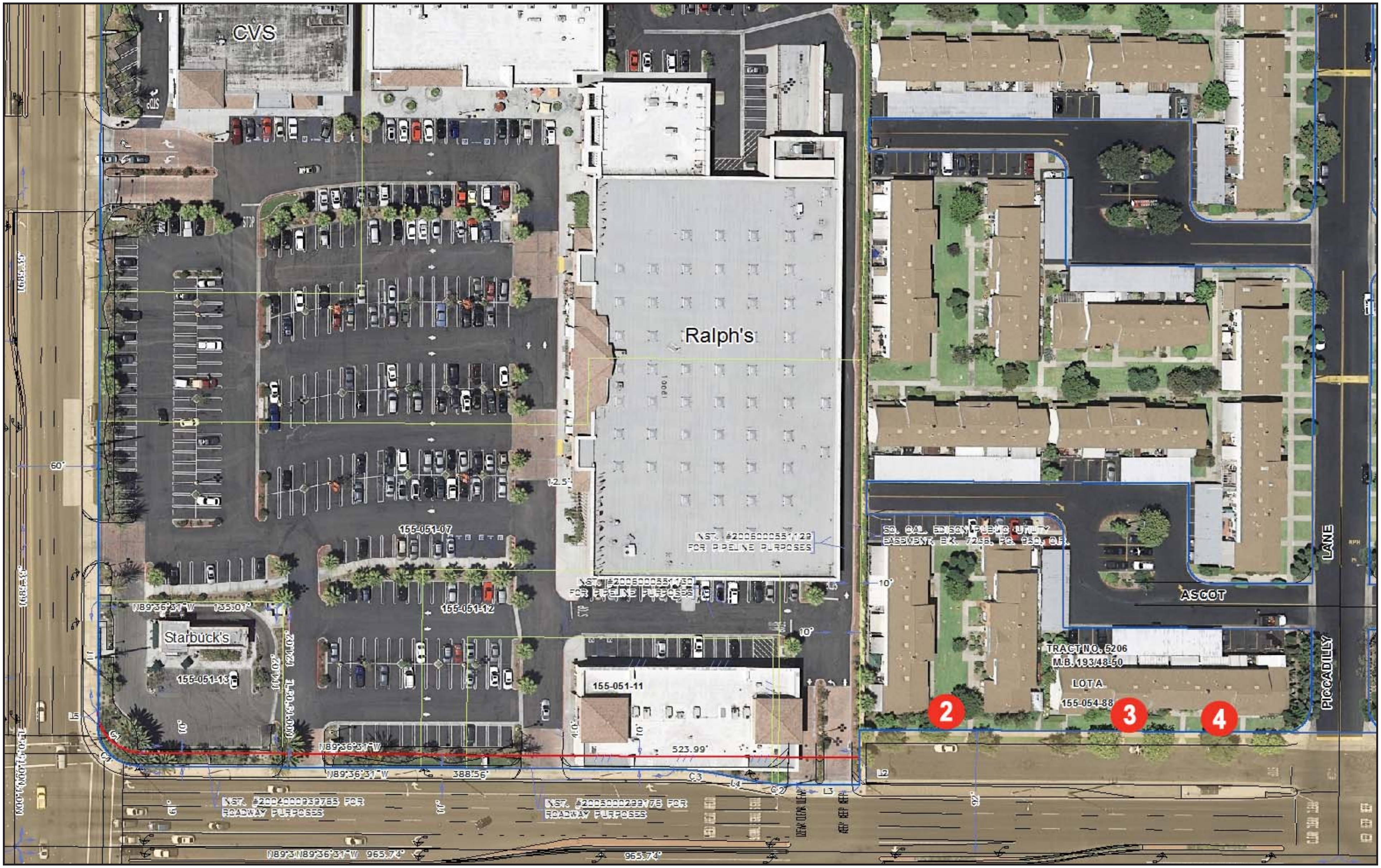
ENVIRONMENTAL IMPACT REPORT
BROOKHURST STREET/ADAMS AVENUE INTERSECTION IMPROVEMENTS

Noise Modeling Locations – Northwest Quadrant

Exhibit 5.5-3



- Existing Right-of-Way
- Proposed Right-of-Way
- Modeled Receptor Location

NOT TO SCALE

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Noise Modeling Locations – Northeast Quadrant

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Exhibit 5.5-4

- Existing Right-of-Way
- Proposed Right-of-Way
- Modeled Receptor Location

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ENVIRONMENTAL IMPACT REPORT
BROOKHURST STREET/ADAMS AVENUE INTERSECTION IMPROVEMENTS

Noise Modeling Locations – Southwest Quadrant

Exhibit 5.5-5

- Existing Right-of-Way
- Proposed Right-of-Way
- Modeled Receptor Location

NOT TO SCALE

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ENVIRONMENTAL IMPACT REPORT
BROOKHURST STREET/ADAMS AVENUE INTERSECTION IMPROVEMENTS

Noise Modeling Locations – Southeast Quadrant

Exhibit 5.5-6

The primary existing noise sources in the project area are a result of current transportation facilities. Both Brookhurst Street and Adams Avenue are designated as major (six-lane divided) arterial roadways and generate a steady source of ambient noise in the project vicinity. Table 5.5-5, *Existing Traffic Noise Levels*, illustrates the existing noise levels at sensitive receptors that would be closest to the Brookhurst Street and Adams Avenue intersection and the proposed improvements. Table 5.5-5 also identifies the location and type of development for each modeled receptor location. Residences in the project area are exposed to existing noise levels ranging from 60.1 to 70.5 dBA CNEL.

Table 5.5-5
Existing Traffic Noise Levels

Receptor Number	Location	Type of Development	Existing Noise Level (dBA CNEL)
1	North side of Adams Avenue, west of Brookhurst Street	Residential (Huntington Continental)	64.4
2	North side of Adams Avenue, east of Brookhurst Street	Residential (Huntington Bay)	69.6
3			69.5
4			69.6
5	South side of Adams Avenue, west of Brookhurst Street	Residential (Single Family)	66.4
6			66.6
7			60.1
8	South side of Adams Avenue, east of Brookhurst Street	Residential (Single Family)	62.1
9			66.2
10	West side of Brookhurst Street, north of Adams Avenue	Residential (Huntington Continental)	69.9
11			70.5

Notes: dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Noise modeling is based upon traffic data within the *Brookhurst Street/Adams Avenue Intersection Improvements Project Traffic Impact Analysis*, prepared by RBF Consulting, April 11, 2013; refer to Appendix 13.5, *Noise Data*, for detailed noise modeling data.

STATIONARY NOISE SOURCES

The project area consists of a mix of residential and commercial uses served by a grid system of arterial and collector streets. The primary sources of stationary noise in the project vicinity are existing retail/commercial developments (i.e., mechanical equipment and parking areas). The noise associated with these sources may represent a single-event noise occurrence, short-term or long-term/continuous noise.

5.5.2 REGULATORY SETTING

It is difficult to specify noise levels that are generally acceptable to everyone; what is annoying to one person may be unnoticed by another. Standards may be based on documented complaints in response to documented noise levels, or based on studies of the ability of people to sleep, talk or work under various noise conditions. All such studies, however, recognize that individual responses vary considerably. Standards usually address the needs of most of the general population. This section summarizes the laws, ordinances, regulations and standards that are applicable to the project. Regulatory requirements related to environmental noise are typically promulgated at the local level. However, federal and state agencies provide standards and guidelines to the local jurisdictions.

STATE OF CALIFORNIA GUIDELINES

California Government Code

California Government Code Section 65302 (f) mandates that the legislative body of each county and city adopt a noise element as part of their comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services.

The guidelines rank noise land use compatibility in terms of "normally acceptable", "conditionally acceptable", "normally unacceptable", and "clearly unacceptable" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial and professional uses. Table 5.5-6, *Land Use Compatibility for Community Noise Environments*, presents guidelines for determining acceptable and unacceptable community noise exposure limits for various land use categories. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

Table 5.5-6
Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure (CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential-Low Density, Single-Family, Duplex, Mobile Homes	50 – 60	55 – 70	70 – 75	75 – 85
Residential – Multiple Family	50 – 65	60 – 70	70 – 75	75 – 85
Transient Lodging – Motel, Hotels	50 – 65	60 – 70	70 – 80	80 – 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 70	60 – 70	70 – 80	80 – 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 – 70	NA	65 – 85
Sports Arenas, Outdoor Spectator Sports	NA	50 – 75	NA	70 – 85
Playgrounds, Neighborhood Parks	50 – 70	NA	67.5 – 77.5	72.5 – 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 70	NA	70 – 80	80 – 85
Office Buildings, Business Commercial and Professional	50 – 70	67.5 – 77.5	75 – 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 – 80	75 – 85	NA

CNEL = community noise equivalent level; NA = not applicable

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.
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 have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.
NORMALLY UNACCEPTABLE: New construction or development should 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 must be included in the design.
CLEARLY UNACCEPTABLE: New construction or development should generally not be undertaken.

Source: Office of Planning and Research, California, *General Plan Guidelines,* October 2003.

CITY OF HUNTINGTON BEACH

The City of Huntington Beach has a noise ordinance that provides noise guidelines and standards for significant stationary noise generators. In regards to the control of traffic noise, the City defers to the standards set forth within Table 5.5-6, above. Section 8.40.090(d) of the City's *Noise Ordinance* addresses special provisions of the Noise Ordinance regarding construction activities, as follows:

> *The following activities shall be exempt from the provisions of this chapter:*
>
> d. *Noise sources associated with construction, repair, remodeling, or grading of any real property; provided a permit has been obtained from the City; and provided said activities do not take place between the hours of 8 p.m. and 7 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.*

5.5.3 IMPACT THRESHOLDS AND SIGNIFICANCE CRITERIA

Appendix G, of the *CEQA Guidelines* contains analysis guidelines related to the assessment of noise impacts. These guidelines have been utilized as thresholds of significance for this analysis. As stated in Appendix G, a project would create a significant environmental impact if it would:

- Expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose persons to or generate excessive ground borne vibration or ground borne noise levels;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- 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 (refer to Section 10.0, *Effects Found Not To Be Significant*); and
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels (refer to Section 10.0, *Effects Found Not To Be Significant*).

SIGNIFICANCE OF CHANGES IN AMBIENT NOISE LEVELS

Significance of Changes in Traffic Noise Levels

Traffic noise impacts typically occur when there is a discernable increase in traffic and the resulting noise level exceeds an established noise standard. In community noise considerations, changes in noise levels greater than 3 dB are often identified as substantial, while changes less than 1 dB will not be discernible to local residents. A 5 dB change is generally recognized as a clearly discernable difference.

As traffic noise levels at sensitive uses likely approach or exceed the land use compatibility standards (refer to Table 5.5-6), a 3 dB increase as a result of the project is used as the increase threshold for the project. Thus, the project would result in a significant noise impact when a permanent increase in ambient noise levels of 3 dB occurs upon project implementation and the resulting noise level exceeds the applicable exterior land use compatibility standard at a noise sensitive use.

Significance of Changes in Cumulative Traffic Noise Levels

The project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds the perception level (i.e., auditory level increase) threshold. The combined effect compares the "cumulative with project" condition to the "existing" conditions. This comparison accounts for the traffic noise increase associated with cumulative growth in the area. The following criteria have been utilized to evaluate the combined effect of the cumulative noise increase.

- *Combined Effects*: The cumulative with project noise level ("Future With Project") would cause a significant cumulative impact if a 3 dB increase over existing conditions occurs and the resulting noise level exceeds the applicable exterior standard at a sensitive use.

Although there may be a significant noise increase due to the proposed project in combination with other related projects (combined effects), it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

- *Incremental Effects*: The "Future With Project" causes a 1 dBA increase in noise over the "Future Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded and the resulting noise level exceeds the applicable exterior standard at a noise sensitive use.

5.5.4 IMPACTS AND MITIGATION MEASURES

SHORT-TERM CONSTRUCTION NOISE IMPACTS

- **GRADING AND CONSTRUCTION WITHIN THE AREA WOULD NOT RESULT IN SIGNIFICANT TEMPORARY NOISE IMPACTS TO NEARBY NOISE SENSITIVE RECEIVERS UPON IMPLEMENTATION OF IDENTIFIED MITIGATION.**

Impact Analysis: Construction activities associated with the improvements to the Brookhurst Street/ Adams Avenue intersection would include demolition, site preparation/grading, and paving. Construction activities would occur over approximately six months, and would disturb approximately 10 acres overall. Approximately eight acres of paving would occur, assuming the project would re-pave the entire roadway width along the length of the project limits.

High noise levels can be created by the operation of heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, scrapers, and other heavy-duty construction equipment. Table 5.5-7, *Maximum Noise Levels Generated by Construction Equipment*, indicates the anticipated noise levels of construction equipment. The maximum noise levels presented in Table 5.5-7 are based on the quantity, type, and Acoustical Use Factor for each type of equipment that would be used.

Table 5.5-7
Maximum Noise Levels Generated by Construction Equipment

Type of Equipment	Acoustical Use Factor[1] (percent)	L_{max} at 50 Feet (dBA)
Crane	16	81
Dozer	40	82
Excavator	40	81
Generator	50	81
Grader	40	85
Other Equipment (greater than five horse power)	50	85
Paver	50	77
Roller	20	80
Tractor	40	84
Truck	40	80
Welder	40	73

Note:
1. Acoustical use factor (percent): Estimates the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

Source: Federal Highway Administration, Roadway Construction Noise Model (FHWA-HEP-05-054), January 2006.

Operating cycles for construction equipment used during these phases may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). These estimations of noise levels take into account the distance to the receptor, attenuation from molecular absorption and anomalous excess attenuation.

The closest sensitive receptors to the project site that could be affected by construction noise include the residential uses adjacent to the roadway right-of-way. Each doubling of sound sources with equivalent strength increases the noise level by 3 dBA. A reasonable worst-case assumption is that each piece of construction equipment would operate simultaneously and continuously at some distance from the other equipment. The combined noise level of construction equipment during this period of construction would be 91 dBA L_{max} at a distance of 50 feet from the noise source. Therefore, the closest residences may be subject to short-term noise impacts reaching 91 dBA L_{max} (or potentially greater for the limited receptors closer than 50 feet) generated by construction activities near the project boundary.

Although the residence located at 20011 Lawson Lane is located fewer than 50 feet from the project site, it would not be exposed to continuous close-range construction noise. Construction would occur throughout the project site and would not be concentrated or confined in the area directly adjacent to the residence. Normally, construction activities occur in small construction zones with noise emanating from the middle of the area. Therefore, the distance utilized in the construction analysis (50 feet) approximates the acoustical dispersal characteristics of the nearest active small construction zone to the surrounding receptors. Construction activities typically involve several pieces of equipment moving throughout a small area; however, these pieces of equipment are typically not operating simultaneously.

Pursuant to Section 8.40.090(d) of the City's *Noise Ordinance*, construction activities would be allowed between the hours of 7:00 AM and 8:00 PM on weekdays and Saturdays. Construction activities are not permitted on Sundays or legal holidays. Implementation of Mitigation Measure N-1 would minimize impacts from construction noise by utilizing properly maintained mufflers, notifying surrounding uses of construction activities, appointing a Noise Disturbance Coordinator, implementing noise reduction methods, orienting construction equipment away from sensitive receptors, and adhering to the City's allowable hours of construction. Thus, with adherence to the City's Municipal Code and implementation of Mitigation Measure N-1, a less than significant impact would result from construction activities.

Construction Traffic Noise

Construction crew commutes and the transport of construction equipment and materials to the project site would increase noise levels incrementally along roads used to access the construction area. Table 5.5-7, indicates the maximum noise levels of anticipated equipment to be utilized during the construction of the proposed alignment based on a distance of 50 feet between the equipment and a noise receptor. As shown in Table 5.5-7, trucks used during the construction phase have the potential to generate noise levels at a maximum of 80 dBA L_{max} with trucks passing at 50 feet. However, the projected construction traffic would be minimal when compared to the existing traffic volumes on Brookhurst Street and Adams Avenue. Therefore, periodic increases in noise levels during short-term construction-related worker commutes and equipment transport noise impacts would not be substantial. Impacts in this regard would be less than significant.

Mitigation Measures:

N-1 Prior to issuance of any Grading Permit, the City Engineer shall confirm that the project contractor provides evidence acceptable to demonstrate that the project complies with the following:

- Construction contracts specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other state required noise attenuation devices.
- Property owners and occupants located within 100 feet of the project boundary shall be sent a notice, at least 15 days prior to commencement of construction of each phase, regarding the construction schedule of the proposed project. A sign, legible at a distance of 50 feet shall also be posted at the project construction site. All notices and signs shall be reviewed and approved by the City Engineer, prior to mailing or posting and shall indicate the dates and duration of construction activities, as well as provide a contact name and a telephone number where residents can inquire about the construction process and register complaints.
- If impact equipment (e.g., jack hammers, pavement breakers, and rock drills) is used during project construction, hydraulically or electric-powered equipment shall be used wherever feasible to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used (a muffler can lower noise levels from the exhaust by up to about 10 dBA).
- Construction haul routes shall be designed to avoid noise sensitive uses (e.g., residences, convalescent homes, etc.), to the extent feasible.
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.
- Construction activities shall not take place outside of the allowable hours specified by the City's Municipal Code Section 8.40.090(d) (7:00 AM and 8:00 PM) on weekdays and Saturdays.

Level of Significance: Less Than Significant Impact with Mitigation Incorporated.

CONSTRUCTION-RELATED VIBRATION IMPACTS

● **GRADING AND CONSTRUCTION ASSOCIATED WITH THE PROPOSED PROJECT WOULD NOT RESULT IN SIGNIFICANT TEMPORARY VIBRATION IMPACTS TO NEARBY SENSITIVE RECEPTORS.**

Impact Analysis: Project construction can generate varying degrees of ground-borne vibration, depending on the construction procedure and the construction equipment used. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 inch/second) appears to be conservative.

The types of construction vibration impact include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. The vibration produced by construction equipment is illustrated in Table 5.5-8, *Typical Vibration Levels for Construction Equipment*.

Table 5.5-8
Typical Vibration Levels for Construction Equipment

Equipment	Approximate peak particle velocity at 25 feet (inches/second)	Approximate peak particle velocity at 50 feet (inches/second)
Large bulldozer	0.089	0.031
Loaded trucks	0.076	0.027
Small bulldozer	0.003	0.001
Auger/drill rigs	0.089	0.031
Jackhammer	0.035	0.012
Vibratory hammer	0.035	0.012
Vibratory compactor/roller	0.003	0.001

Notes:
1. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006. Table 12-2.
2. Calculated using the following formula:

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

where: PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance
PPV (ref) = the reference vibration level in in/sec from Table 12-2 of the FTA *Transit Noise and Vibration Impact Assessment Guidelines.*
D = the distance from the equipment to the receiver

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006.

Ground-borne vibration decreases rapidly with distance. As indicated in Table 5.5-8, based on the FTA data, vibration velocities from typical heavy construction equipment operations that would be used during project construction range from 0.003 to 0.089 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity. The closest structures to the nearest construction activity area would generally be 50 feet away. However, in some instances, curb and gutter work could occur as close as 10 feet from existing residences. In those instances, vibration velocities for equipment associated with this work (e.g., jackhammers) would be approximately 0.14 inches-per-second PPV. At 50 feet from the source of activity (the distance most construction activities would occur), vibration velocities range from 0.001 to 0.031 inch-per-second PPV. Therefore, as these values are below the 0.2 inch-per-second PPV significance threshold, vibration impacts associated with construction would be less than significant and no mitigation measures are required.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

LONG-TERM (MOBILE) NOISE IMPACTS

- **IMPLEMENTATION OF THE PROPOSED PROJECT WOULD NOT SIGNIFICANTLY INCREASE TRAFFIC NOISE IN THE AREA.**

Impact Analysis:

Long-Term Traffic Noise

The proposed improvements to the Brookhurst Street/Adams Avenue intersection would add 10-foot travel lanes in each direction on both roadways. It should be noted that the proposed project is not a trip-generating land use, and would not create additional vehicular trips. Potential long-term noise impacts associated with operations of the proposed alignment would be solely generated from traffic noise. The TNM 2.5 model is sensitive to the volume of trucks on the roadway because trucks contribute disproportionately to the traffic noise. Traffic volumes, speeds, and truck percentages on Adams Avenue and Brookhurst Street were obtained from data within the *Brookhurst Street/Adams Avenue Intersection Improvements Project Traffic Impact Analysis*, prepared by RBF Consulting (April 11, 2013) and the *Brookhurst Street and Adams Avenue Intersection Improvements, CC-1377 Project Report* (Project Report) prepared by Harris & Associates (March 12, 2013). The traffic distribution for trucks is higher than on typical streets, due to the street classification and the fact that Adams Avenue and Brookhurst Street are designated truck routes under the City's *General Plan*.

The traffic noise model results for the future scenario (Year 2030) without the project intersection improvements and future with proposed intersection improvements are depicted in Table 5.5-9, *Future (2030) Traffic Noise Levels*. Additionally, the locations of the modeled sensitive receptors are depicted in Exhibit 5.5-3 through Exhibit 5.5-6. As indicated in Table 5.5-9, future traffic noise levels with and without implementation of the proposed intersection improvements would range from 61.7 to 71.5 dBA CNEL. As stated above, the proposed project is not a trip-generating land use, and would not create additional vehicular trips. The only project related increase would be 0.1 dBA, which would occur at Receptor 9. This noise level increase would be due to the additional travel lane that would bring vehicles closer to Receptor 9.

As described above, traffic noise impacts typically occur when there is a discernible increase in traffic and the resulting noise level exceeds an established noise standard. In community noise considerations, changes in noise levels greater than 3 dB are often identified as substantial, while changes less than 1 dB will not be discernible to local residents. Therefore, an increase of 0.1 dBA is unlikely to be discernible. Thus, although the project would result in an intersection widening that would bring travel lanes closer to surrounding sensitive uses, a significant increase in noise would not occur based on established noise thresholds.

Existing modeled noise levels depicted in Table 5.5-5 indicate that existing traffic noise ranges from 60.1 to 70.5 dBA CNEL at the closest sensitive receptors. The existing noise levels exceed the "normally acceptable" land use compatibility criteria and the higher end exceeds the "conditionally acceptable" land use compatibility criteria for single and multi-family residential uses. Under future conditions ADT in the project area would increase by 24 to 53 percent over existing traffic volumes. However, future traffic noise levels would increase by less than two decibels (maximum) when compared to existing conditions. As with existing traffic noise level, future traffic noise (with and without the project) would also exceed the "normally acceptable" land use compatibility criteria (Table 5.5-6). Although existing and future traffic noise exceeds the "normally acceptable" land use compatibility criteria, the project-related noise increase is unlikely to be discernible (0.1 dBA) and impacts would be less than significant.

Table 5.5-9
Future (2030) Traffic Noise Levels

Receptor Number	Location	Type of Development	Future (2030) Noise Levels (dBA CNEL)		
			No Project	With Project	Project Related Increase
1	North side of Adams Avenue, west of Brookhurst Street	Residential (Huntington Continental)	66.0	66.0	0
2	North side of Adams Avenue, east of Brookhurst Street	Residential (Huntington Bay)	71.5	71.5	0
3			71.4	71.4	0
4			71.5	71.5	0
5	South side of Adams Avenue, west of Brookhurst Street	Residential (Single Family)	68.0	68.0	0
6			68.3	68.3	0
7			61.7	61.7	0
8	South side of Adams Avenue, east of Brookhurst Street	Residential (Single Family)	64.0	64.0	0
9			68.0	68.1	0.1
10	West side of Brookhurst Street, north of Adams Avenue	Residential (Huntington Continental)	70.8	70.8	0
11			71.4	71.4	0

Notes: dBA = A-weighted decibels; CNEL = community noise equivalent level
Source: Noise modeling is based upon traffic data within the *Brookhurst Street/Adams Avenue Intersection Improvements Project Traffic Impact Analysis*, prepared by RBF Consulting, April 11, 2013; refer to Appendix 13.5, *Noise Data*, for detailed noise modeling data.

Long-Term Vibration

Transportation projects have the potential to create long-term vibration impacts as a result of vehicular traffic along roadways. A vibration effect, such as rattling of windows, is typically a direct result of airborne noise. Most problems with on-road vehicle-related vibration can be directly related to a pothole, bump, expansion joint, or other discontinuity in the road surface. Smoothing bumps, correcting uneven pavement surfaces, or filling existing potholes would usually solve the problem. If a roadway is smooth, the ground-borne vibration from traffic is barely perceptible.

Rubber tires and vehicle suspension systems provide vibration isolation. Therefore, it is unusual for vehicles on roadways to cause ground-borne noise or vibration impacts. Long-term maintenance of the intersection and associated roadways would be provided by the City of Huntington Beach to ensure surface degradation is minimized. As such, implementation of the proposed alignment would result in less than significant impacts in this regard. Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise level associated with operation of the intersection would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

LONG-TERM STATIONARY NOISE IMPACTS

- **THE PROPOSED PROJECT WOULD NOT RESULT IN A SIGNIFICANT INCREASE IN AMBIENT NOISE LEVELS.**

Impact Analysis: As the project consists of intersection improvements, it does not propose any long-term stationary noise sources. Stationary noise sources are generally associated with commercial and industrial developments involving mechanical equipment, trash compactors, loading areas, parking areas, heating, and ventilation units. No noise generating stationary operations would be implemented into the project design. Therefore, the proposed intersection improvement project would result in less than significant impacts in this regard.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

5.5.5 CUMULATIVE IMPACTS

SHORT-TERM CUMULATIVE IMPACTS

- **DEVELOPMENT ASSOCIATED WITH THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS WOULD NOT RESULT IN CUMULATIVELY CONSIDERABLE CONSTRUCTION NOISE IMPACTS.**

Impact Analysis: The basis for cumulative analysis is presented in Section 4.0, *Basis of Cumulative Analysis*. As outlined in Table 4-1, *Cumulative Projects List*, and illustrated on Exhibit 4-1, *Cumulative Project Locations*, the related projects and other possible development would occur throughout Huntington Beach. Based on the projects identified in Table 4-1, only two would occur within one mile of the project site (Lamb School and Wardlow School residential projects).

Cumulative Construction Noise

The City of Huntington Beach has no control over the timing or sequencing of the related projects, and as such, any quantitative analysis to ascertain the daily construction noise that assumes multiple, concurrent construction projects would be speculative. Construction-related noise for the proposed project and each related project would be localized. In addition, it is likely that each of the related projects would have to comply with the local *Noise Ordinance*, as well as mitigation measures that may be prescribed pursuant to CEQA provisions that require significant impacts to be reduced to the extent feasible.

Construction noise impacts would cease upon completion of excavation, grading, and building activities. Compliance with *Noise Ordinance* requirements, would serve to minimize the length of time noise-sensitive receptors are exposed to significant noise levels. Additionally, because noise dissipates as it travels away from its source, noise impacts from construction activities would be limited to each of the respective sites and their vicinities. The nearest related project to the project site would be the Lamb School residential project (approximately 0.37 miles [1,954 feet] to the northeast). As such, construction noise from cumulative projects would not interact with noise from the proposed project due to distances between the specific sites. Therefore, a less than significant impact would occur in this regard.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

LONG-TERM CUMULATIVE IMPACTS

● **DEVELOPMENT ASSOCIATED WITH THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS WOULD NOT RESULT IN CUMULATIVELY CONSIDERABLE LONG-TERM NOISE IMPACTS.**

***Impact Analysis*:**

Cumulative Mobile Noise

The cumulative mobile noise analysis is conducted in a two-step process. First, the combined effects from both the proposed project and other projects are compared. Second, for combined effects that are determined to be cumulatively significant, the project's incremental effects then are analyzed. The project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds perception level (i.e., auditory level increase) threshold. The combined effect compares the "cumulative plus project" condition to "existing" conditions. This comparison accounts for the traffic noise increase associated with cumulative growth in the area. The following criteria have been utilized to evaluate the combined effect of the cumulative noise increase.

- *Combined Effects*: The cumulative with project noise level ("Future With Project") would cause a significant cumulative impact if a 3 dBA increase over existing conditions occurs and the resulting noise level exceeds the applicable exterior standard at a sensitive use.

Although there may be a significant noise increase due to the proposed project in combination with identified cumulative projects (combined effects), it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

- *Incremental Effects*: The "Future With Project" causes a 1 dBA increase in noise over the "Future Without Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded. Noise by definition is a localized phenomenon, and drastically reduces as distance from the source increases. Consequently, only proposed projects and growth due to occur in the general vicinity of the project site would contribute to cumulative noise impacts. Table 5.5-10, *Cumulative Noise Scenario*, lists the traffic noise effects at sensitive receptors in the project vicinity for "Existing", "Future Without Project", and "Future With Project", including incremental and net cumulative impacts.

Table 5.5-10
Cumulative Noise Scenario

Receptor Number	Location	Existing Noise Level (dBA CNEL)	Future (2030) Noise Levels (dBA CNEL)		Combined Effects	Incremental Effects	Cumulatively Significant Impact?
			No Project	With Project	Difference in dBA Between Existing and Future With Project	Difference in dBA Between Future Without Project and Future With Project	
1	North side of Adams Avenue, west of Brookhurst Street	64.4	66.0	66.0	1.6	0	No
2	North side of Adams Avenue, east of Brookhurst Street	69.6	71.5	71.5	1.9	0	No
3		69.5	71.4	71.4	1.9	0	No
4		69.6	71.5	71.5	1.9	0	No
5	South side of Adams Avenue, west of Brookhurst Street	66.4	68.0	68.0	1.6	0	No
6		66.6	68.3	68.3	1.7	0	No
7		60.1	61.7	61.7	1.6	0	No
8	South side of Adams Avenue, east of Brookhurst Street	62.1	64.0	64.0	1.9	0	No
9		66.2	68.0	68.1	1.9	0.1	No
10	West side of Brookhurst Street, north of Adams Avenue	69.9	70.8	70.8	0.9	0	No
11		70.5	71.4	71.4	0.9	0	No

Notes: dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Noise modeling is based upon traffic data within the *Brookhurst Street/Adams Avenue Intersection Improvements Project Traffic Impact Analysis*, prepared by RBF Consulting, April 11, 2013; refer to Appendix 13.5, *Noise Data*, for detailed noise modeling data.

First, it must be determined whether the Cumulative Plus Project Increase Above Existing Conditions (*Combined Effects*) is exceeded. Per Table 5.5-10 this criterion is not exceeded along any of the receptors. Next, under the *Incremental Effects* criteria, cumulative noise impacts are defined by determining if the ambient (Future Without Project) noise level is increased by 1 dB or more. Based on the results of Table 5.5-10, there would not be any receptors that would result in significant impacts, as they would not exceed both the combined and incremental effects criteria. The proposed project would not result in long-term mobile noise impacts based on project related traffic as well as cumulative and incremental noise levels. Therefore, the proposed project, in combination with cumulative background traffic noise levels, would result in a less than significant cumulative impact in this regard.

Cumulative Stationary Noise

As the project consists of intersection improvements, it does not propose any long-term stationary noise sources. Thus, the proposed project would not result in long-term stationary noise sources that could significantly affect surrounding sensitive receptors. Additionally, as the nearest cumulative project (Lamb School residential project) is located approximately 0.37 miles (1,954 feet) from the proposed project, the localized stationary noise impacts from the project site would not cumulatively considerable due to distance. Furthermore, future development proposals within the City of Huntington Beach would require separate discretionary approval and CEQA assessment, which would address potential noise impacts and identify necessary attenuation measures, where appropriate. Thus, cumulative noise exposure for long-term operations would be considered a less than significant impact.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

5.5.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts related to noise have been identified.

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