Placentia Logistics

NOISE IMPACT ANALYSIS

COUNTY OF RIVERSIDE

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
I-215	Interstate 215
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
MARB/IPA	March Air Reserve Base / Inland Port Airport
mph	Miles per hour
OPR	Office of Planning and Research
PPV	Peak particle velocity
Project	Placentia Logistics
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

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EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the potential noise impacts and the necessary noise mitigation measures, if any, for the proposed Placentia Logistics development ("Project"). The Project site is located on the northwest corner of Harvill Avenue and Placentia Street, in unincorporated County of Riverside. The Project is proposed to consist of up to 233,062 square feet (sf) of high-cube transload/short-term storage warehouse (without cold storage) use (85 percent of the total square footage) and 41,128 square feet of general light industrial use (15 percent of the total square footage) for a total of 274,190 square feet within a single building. The Project is anticipated to be constructed in a single phase by the year 2021. At the time this noise analysis was prepared, the future tenants of the proposed Project were unknown, and therefore, this noise study includes a conservative analysis of the proposed Project uses. This study has been prepared to satisfy applicable County of Riverside standards and thresholds of significance based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the operation of the Project will influence the traffic noise levels in surrounding off-site areas. To quantify the off-site traffic noise increases on the surrounding off-site areas, the changes in traffic noise levels on six study-area roadway segments were calculated using the transportation related twenty-four hour community noise equivalent levels (CNEL) based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in the *Placentia Logistics Traffic Impact Analysis* prepared by Urban Crossroads, Inc. (2) To assess the off-site noise level impacts associated with the proposed Project, noise contour boundaries were developed for Existing 2018, Existing plus Ambient Growth (EA) 2021, EA plus Cumulative (EAC) 2021 and Horizon Year 2040 conditions. The analysis shows that the unmitigated Project-related traffic noise level increases under all with Project traffic scenarios are considered *less than significant* impacts at receiving land uses adjacent to the study area roadway segments.

OPERATIONAL NOISE ANALYSIS

Using reference noise levels to represent the expected noise sources from the Placentia Logistics site, the operational analysis estimates the Project-related stationary-source hourly average L_{eq} noise levels at nearby sensitive receiver locations. The typical activities associated with the proposed Placentia Logistics are anticipated to include loading dock activity, roof-top air conditioning units, and parking lot vehicle movements. The operational noise analysis shows that the Project will satisfy the County of Riverside stationary-source exterior hourly average L_{eq} noise levels of 55 dBA L_{eq} daytime and 45 dBA L_{eq} nighttime noise level standards at all nearby receiver locations. Therefore, the Project-related operational-source noise impacts are considered *less than significant*.

OPERATIONAL VIBRATION ANALYSIS

The operation of the Project site will include heavy trucks moving on site to and from the loading dock areas. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. According to the FTA *Transit Noise Impact and Vibration Assessment,* (3 p. 113) trucks rarely create vibration that exceeds 70 VdB or 0.003 in/sec RMS (unless there are bumps due to frequent potholes in the road). Trucks transiting on site will be travelling at very low speeds so it is expected that delivery truck vibration impacts will satisfy the County of Riverside 0.01 in/sec RMS vibration threshold, and therefore, will be *less than significant*.

CONSTRUCTION NOISE ANALYSIS

Using sample reference noise levels to represent the planned construction activities of the Placentia Logistics site, this analysis estimates the Project-related construction noise levels at nearby sensitive receiver locations. Since the County of Riverside General Plan and Municipal Codes do not identify specific construction noise level thresholds, a threshold is identified based on the National Institute for Occupational Safety and Health (NIOSH) limits for construction noise. The Project-related short-term construction noise levels are expected to range from 51.8 to 73.7 dBA L_{eq} and will satisfy the 85 dBA L_{eq} threshold identified by the National Institute for Occupational Safety and Health (NIOSH) at all receiver locations. Therefore, based on the results of this analysis, all nearby sensitive receiver locations will experience *less than significant* impacts due to Project construction noise levels.

CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Based on this analysis, it is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. This analysis shows the highest construction vibration levels are estimated at 0.008 in/sec RMS, which is below the vibration standard of 0.01 in/sec RMS at all receiver locations in the County of Riverside. Therefore, the Project-related vibration impacts are considered *less than significant* during the construction activities at the Project site.

Moreover, the impacts at the site of the closest sensitive receivers are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter.

SUMMARY OF CEQA SIGNIFICANCE FINDINGS

The results of this Placentia Logistics Noise Impact Analysis are summarized below based on the significance criteria in Section 4 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	**Mitigated**
Off-Site Traffic Noise	7	*Less Than Significant*	-
Operational Noise	9	*Less Than Significant*	-
Operational Vibration		*Less Than Significant*	-
Construction Noise	10	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Placentia Logistics ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for transportation related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise and short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed Placentia Logistics site is located on the northwest corner of Harvill Avenue and Placentia Street, in unincorporated County of Riverside, as shown on Exhibit 1-A. The Project site is mostly vacant with 4 existing single-family homes are located on the easterly portion of the site with access from Sharon Ann Lane. All existing residences and ancillary structures within the Project site will be demolished and Sharon Ann Lane will be vacated.

Existing land uses near the site include noise-sensitive residential homes located west and south of the Project site. Properties to the north and east are developed with warehouse uses. The Interstate 215 (I-215) Freeway is located approximately 1,200 feet east of the Project site. In addition, the Burlington National Santa Fe (BNSF) railroad lines are located roughly 830 feet east of the Project site. The Project is located roughly 2.5 miles southwest of the southerly end of Runway 14-32 of the March Air Reserve Base/Inland Port Airport (MARB/IPA) and 3.8 miles north of the Perris Valley Airport.

1.2 PROJECT DESCRIPTION

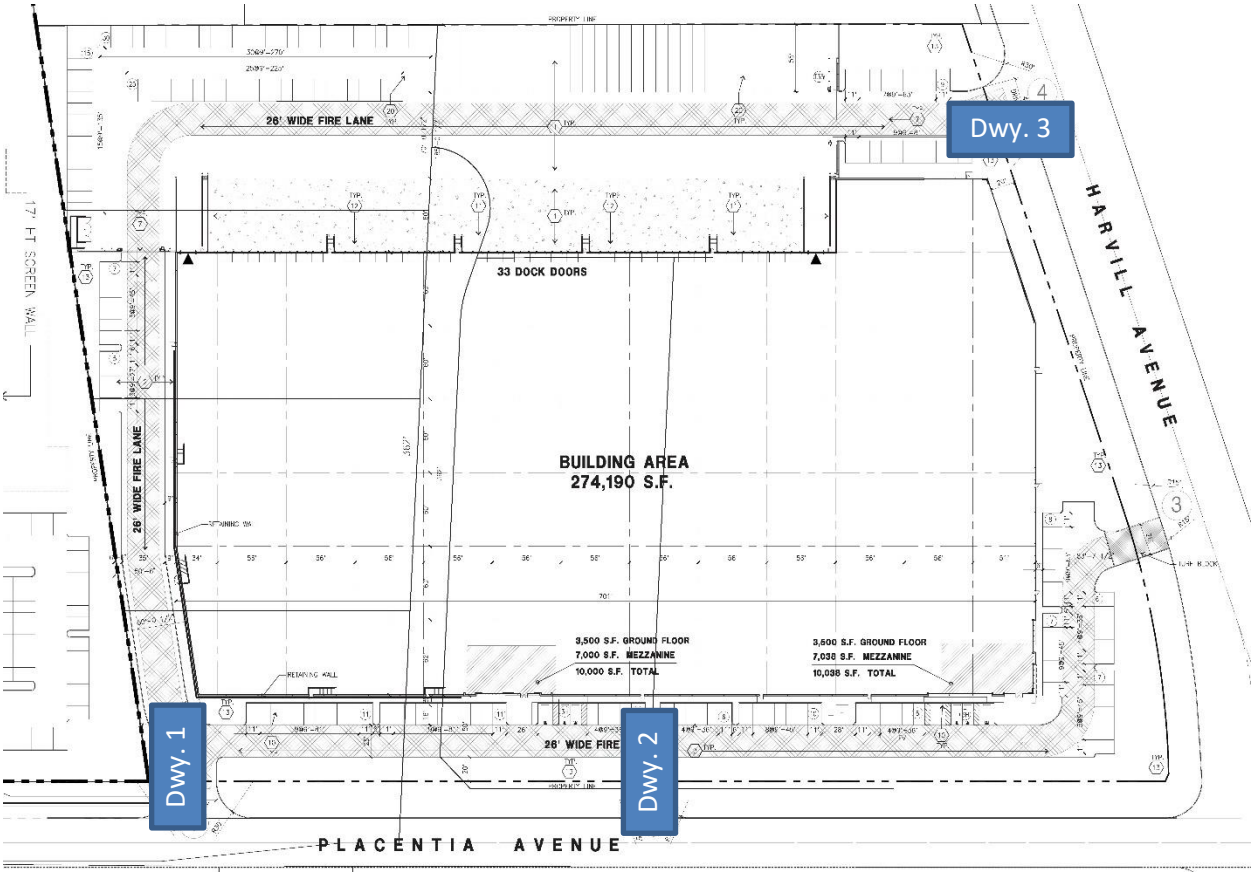
The Project is proposed to consist of up to 233,062 square feet (sf) of high-cube transload/short-term storage warehouse (without cold storage) use (85 percent of the total square footage) and 41,128 square feet of general light industrial use (15 percent of the total square footage) for a total of 274,190 square feet within a single building, as shown on Exhibit 1-B. The Project is anticipated to be constructed in a single phase by the year 2021.

At the time this noise analysis was prepared, the future tenants of the proposed Project were unknown. The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning units, and parking lot vehicle movements. This noise analysis is intended to describe noise level impacts associated with the expected typical operational activities at the Project site. To present a conservative approach, this report assumes the Project will operate 24-hours daily for seven days per week.

Per the *Placentia Logistics Traffic Impact Analysis* prepared by Urban Crossroads, Inc. the Project is expected to generate a total of approximately 530 trip-ends per day (actual vehicles) and includes 149 truck trip-ends per day. (2) This noise study relies on the actual Project trips (as opposed to the passenger car equivalents) to accurately account for the effect of individual truck trips on the study area roadway network.

EXHIBIT 1-A: LOCATION MAP

EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

Noise is simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

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

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

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (4) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort. (5) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

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

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The County of Riverside relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (4)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually

sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (6)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (4)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The FHWA does not consider the planting of vegetation to be a noise abatement measure. (6)

2.3.5 REFLECTION

Field studies conducted by the FHWA have shown that the reflection from barriers and buildings does not substantially increase noise levels. (6) If all the noise striking a structure was reflected back to a given receiving point, the increase would be theoretically limited to 3 dBA. Further, not all the acoustical energy is reflected back to same point. Some of the energy would go over the structure, some is reflected to points other than the given receiving point, some is scattered by ground coverings (e.g., grass and other plants), and some is blocked by intervening structures and/or obstacles (e.g., the noise source itself). Additionally, some of the reflected energy is lost due to the longer path that the noise must travel. FHWA measurements made to quantify reflective increases in traffic noise have not shown an increase of greater than 1-2 dBA; an increase that is not perceptible to the average human ear.

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by up to 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (6)

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (7)

2.7 COMMUNITY RESPONSE TO NOISE

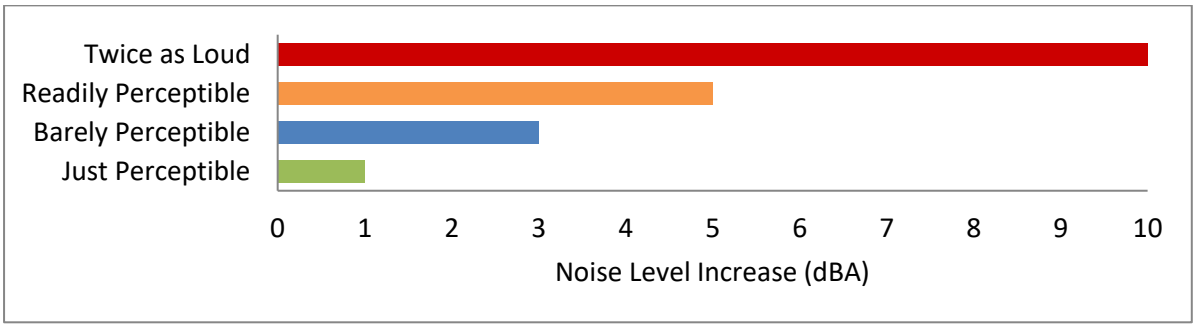
Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (8) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When

traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (8) Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (6)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



Based on the U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch Highway Traffic Noise Analysis and Abatement Policy and Guidance, December 2011

2.8 EXPOSURE TO HIGH NOISE LEVELS

The Occupational Safety and Health Administration (OSHA) sets legal limits on noise exposure in the workplace. The permissible exposure limit (PEL) for a worker over an eight-hour day is 90 dBA. The OSHA standard uses a 5 dBA exchange rate. This means that when the noise level is increased by 5 dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half. The National Institute for Occupational Safety and Health (NIOSH) has recommended that all worker exposures to noise should be controlled below a level equivalent to 85 dBA for eight hours to minimize occupational noise induced hearing loss. NIOSH also recommends a 3 dBA exchange rate so that every increase by 3 dBA doubles the amount of the noise and halves the recommended amount of exposure time. (9)

OSHA has implemented requirements to protect all workers in general industry (e.g. the manufacturing and the service sectors) for employers to implement a Hearing Conservation Program where workers are exposed to a time weighted average noise level of 85 dBA or higher over an eight-hour work shift. Hearing Conservation Programs require employers to measure noise levels, provide free annual hearing exams and free hearing protection, provide training, and conduct evaluations of the adequacy of the hearing protectors in use unless changes to tools, equipment and schedules are made so that they are less noisy and worker exposure to noise is less than the 85 dBA. This noise study does not evaluate the noise exposure of workers within a project or construction site based on CEQA requirements, and instead, evaluates Project-related operational and construction noise levels at the nearby sensitive receiver locations in the Project study area.

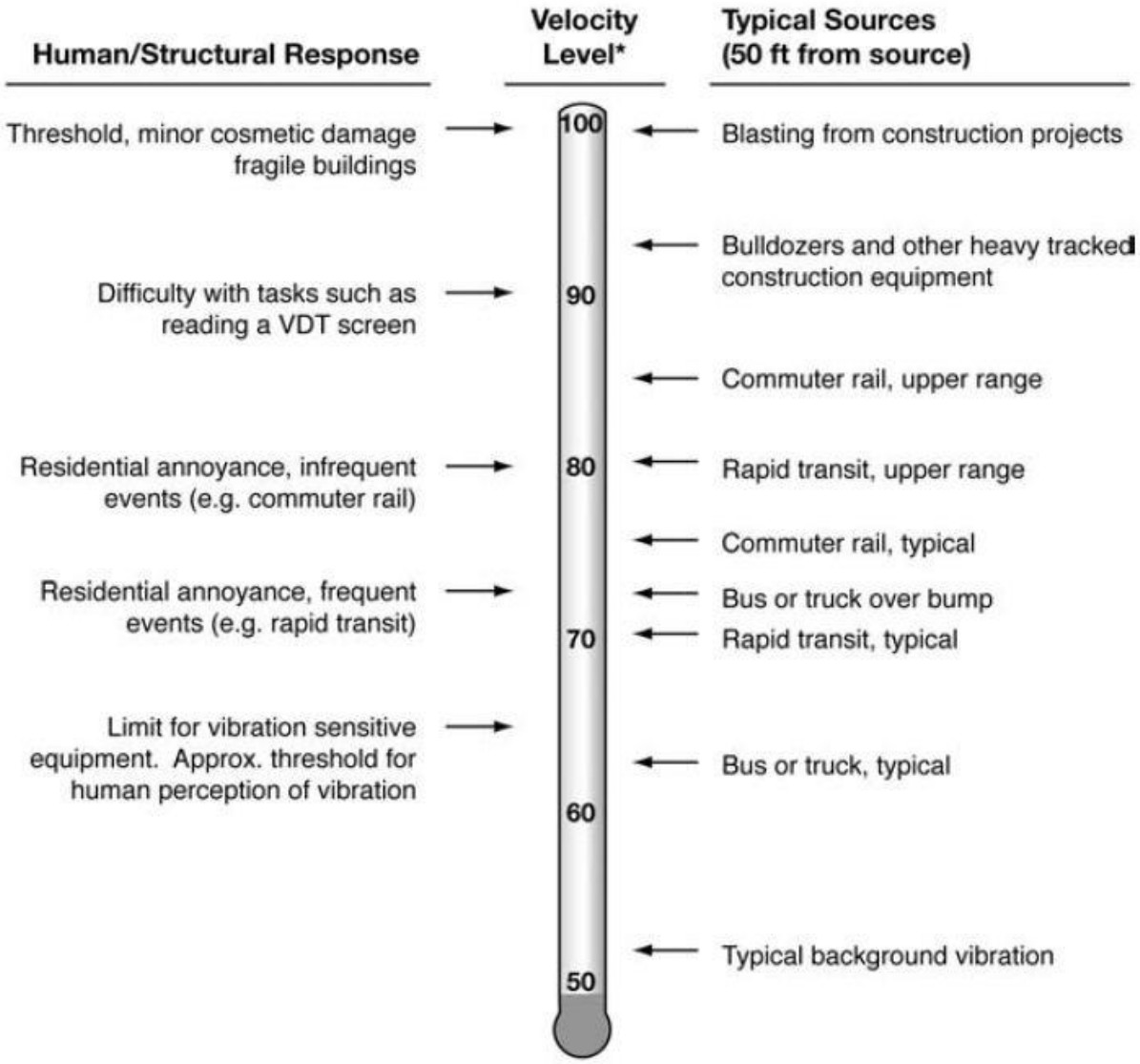
2.9 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (3), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



* *RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

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

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3 REGULATORY SETTING

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. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (10) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA GREEN BUILDING STANDARDS CODE

The State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.507 on Environmental Comfort. (11) These noise standards are applied to new construction in California for controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other areas where noise contours are not readily available. If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class (STC) rating of the wall and roof-ceiling assemblies must be at least 50. For those developments in areas where noise contours are not readily available and the noise level exceeds 65 dBA L_{eq} for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1).

3.3 COUNTY OF RIVERSIDE GENERAL PLAN NOISE ELEMENT

The County of Riverside has adopted a Noise Element of the General Plan to control and abate environmental noise, and to protect the citizens of County of Riverside from excessive exposure to noise. (12) The Noise Element specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports and railroads. In addition, the Noise Element identifies several polices to minimize the impacts

of excessive noise levels throughout the community and establishes noise level requirements for all land uses. To protect County of Riverside residents from excessive noise, the Noise Element contains the following policies related to the Project:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

N 1.3 Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL:

- *Schools*
- *Hospitals*
- *Rest Homes*
- *Long Term Care Facilities*
- *Mental Care Facilities*
- *Residential Uses*
- *Libraries*
- *Passive Recreation Uses*
- *Places of Worship*

N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

N 4.1 Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels:

a. 45 dBA 10-minute L_{eq} between 10:00 p.m. and 7:00 a.m.;

b. 65 dBA 10-minute L_{eq} between 7:00 a.m. and 10:00 p.m.

N 13.1 Minimize the impacts of construction noise on adjacent uses within acceptable standards.

N 13.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.

N 13.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the [County] for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, using methods such as:

i. Temporary noise attenuation fences;

ii. Preferential location and equipment; and

iii. Use of current noise suppression technology and equipment.

N 16.3 Prohibit exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a motion velocity of 0.01 inches/second over a range of 1 to 100 Hz.

To ensure noise-sensitive land uses are protected from high levels of noise (N 1.1), Table N-1 of the Noise Element identifies guidelines to evaluate proposed developments based on exterior and interior noise level limits for land uses and requires a noise analysis to determine needed mitigation measures if necessary. The Noise Element identifies residential use as a noise-sensitive land use (N 1.3) and discourages new development in areas with transportation related levels of 65 CNEL or greater existing ambient noise levels. To prevent and mitigate noise impacts

for its residents (N 1.5), County of Riverside requires noise attenuation measures for sensitive land use exposed to transportation related noise levels higher than 65 dBA CNEL. Policy N 4.1 of the Noise Element sets a stationary-source exterior noise limit not to be exceeded for a cumulative period of more than ten minutes in any hour of 65 dBA L_{eq} for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. To prevent high levels of construction noise from impacting noise-sensitive land uses, policies N 13.1 through 13.3 identify construction noise mitigation requirements for new development located near existing noise-sensitive land uses. Policy 16.3 establishes the vibration perception threshold for rail-related vibration levels, used in this analysis as a threshold for determining potential vibration impacts due to Project construction. (12)

3.3.1 LAND USE COMPATIBILITY

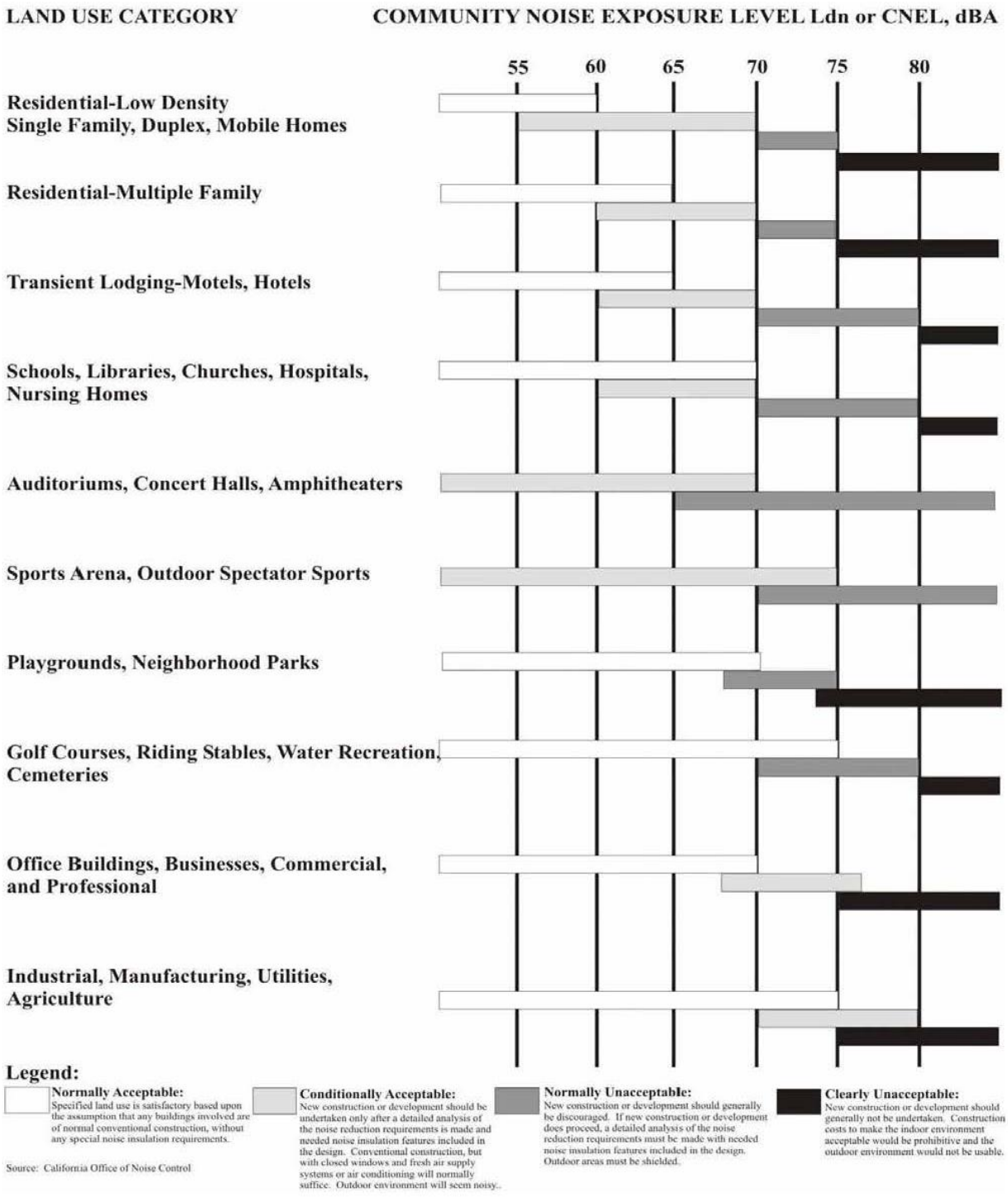
The noise criteria identified in the County of Riverside Noise Element (Table N-1) are guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the County with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels.

The *Land Use Compatibility for Community Noise Exposure* matrix describes categories of compatibility and not specific noise standards. The warehouse/industrial use of the Project is considered *normally acceptable* with unmitigated exterior noise levels of less than 70 dBA CNEL based on the *Industrial, Manufacturing, Utilities, Agriculture* land use compatibility criteria shown on Exhibit 3-A. Residential designated land uses in the Project study area are considered *normally acceptable* with exterior noise levels below 60 dBA CNEL, and *conditionally acceptable* with exterior noise levels of up to 70 dBA CNEL. For *conditionally acceptable* exterior noise levels, of up to 80 dBA CNEL for Project land uses, *new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice*. (12)

3.3.2 COUNTY OF RIVERSIDE STATIONARY NOISE STANDARDS

The County of Riverside has set stationary-source hourly average L_{eq} exterior noise limits to control loading dock activity, roof-top air conditioning units, and parking lot vehicle movements associated with the development of the proposed Placentia Logistics. The County considers noise generated using motor vehicles to be a stationary noise source when operated on private property such as at a loading dock. These facility-related noises, as projected to any portion of any surrounding property containing a *habitable dwelling, hospital, school, library or nursing home*, must not exceed the following worst-case noise levels.

EXHIBIT 3-A: LAND USE COMPATIBILITY FOR COMMUNITY NOISE EXPOSURE



Source: County of Riverside General Plan Noise Element, Table N-1.

Policy N 4.1 of the County of Riverside General Plan Noise Element sets a stationary-source average L_{eq} exterior noise limit not to be exceeded for a cumulative period of more than ten minutes in any hour of 65 dBA L_{eq} for daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. (12)

The County of Riverside Municipal Code Section 9.52.040 *General sound level standards* identify lower, more restrictive exterior noise level standards, which for the purpose of this report, are used to evaluate potential Project-related operational noise level limits instead of the higher the General Plan exterior noise level standards previously identified. The County of Riverside Municipal Code identifies exterior noise level limits of 55 dBA L_{eq} during the daytime hours of 7:00 a.m. to 10:00 p.m., and 45 dBA L_{eq} during the noise-sensitive nighttime hours of 10:00 p.m. to 7:00 a.m. for noise-sensitive uses. (13)

Based on several discussions with the County of Riverside Department of Environmental Health (DEH), Office of Industrial Hygiene (OIH), it is important to recognize that the County of Riverside Municipal Code noise level standards, incorrectly identify maximum noise level (L_{max}) standards that should instead reflect the average L_{eq} noise levels. Moreover, the County of Riverside DEH OIH's April 15th, 2015 *Requirements for determining and mitigating, non-transportation noise source impacts to residential properties* also identifies operational (stationary source) noise level limits using the L_{eq} metric, consistent with the direction of the County of Riverside General Plan guidelines and standards provided in the Noise Element. Therefore, this report has been prepared consistent with the direction of the County of Riverside DEH OIH guidelines and standards using the average L_{eq} noise level metric for stationary-source (operational) noise level evaluation.

3.4 CONSTRUCTION NOISE STANDARDS

Section 9.52.020 of the County's Noise Regulation ordinance indicates that noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May. (13) Neither the County's General Plan nor Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers, which would allow for a quantified determination of what CEQA constitutes a *substantial temporary or periodic noise increase*.

To evaluate whether the Project will generate potentially significant construction noise levels at off-site sensitive receiver locations, a construction-related noise level threshold is adopted from the *Criteria for Recommended Standard: Occupational Noise Exposure* prepared by the National Institute for Occupational Safety and Health (NIOSH). (14) A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The construction related noise level threshold starts at 85 dBA for more than eight hours per day, and for every 3 dBA increase, the exposure time is cut in half. This results in noise level thresholds of 88 dBA for more than four hours per day, 92 dBA for more than one hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. (14) For the purposes of this analysis, the lowest, more conservative

construction noise level threshold of 85 dBA L_{eq} is used as an acceptable threshold for construction noise at the nearby sensitive receiver locations. Since this construction-related noise level threshold represents the energy average of the noise source over a given time, they are expressed as L_{eq} noise levels. Therefore, the noise level threshold of 85 dBA L_{eq} over a period of eight hours or more is used to evaluate the potential Project-related construction noise level impacts at the nearby sensitive receiver locations.

The NIOSH 85 dBA L_{eq} construction noise level threshold used in the Noise Study is consistent with similar construction noise level thresholds identified by the Federal Transit Administration (FTA) that are specific to noise-sensitive residential uses. The FTA Transit Noise and Vibration Impact Assessment identifies a daytime construction noise level threshold of 90 dBA L_{eq} for general assessment. (3) As such, the NIOSH 85 dBA L_{eq} threshold used in the Noise Study to identify potential impacts is more conservative than the FTA threshold which is specific to construction noise at residential receiver locations. In addition, the NIOSH threshold has been used in several other technical noise studies and environmental impact reports prepared in the County of Riverside.

Consistent with the NIOSH 85 dBA L_{eq} construction noise level threshold, the Occupational Safety and Health Administration (OSHA) requires employers to implement a hearing conservation program when noise exposure is at or above 85 dBA over 8 working hours. (14) Workers are required to wear hearing protection when engaged in work that exposes them to noise that equals or exceeds 85 dBA over 8 working hours. This analysis does not evaluate the noise exposure of construction workers within the Project site based on CEQA requirements, and instead, evaluates the Project-related construction noise levels at the nearby sensitive receiver locations using a construction noise level threshold that is consistent with guidelines and standards identified by NIOSH, FTA and OSHA.

3.5 VIBRATION STANDARDS

The County of Riverside does not have vibration standards for temporary construction, but the County's General Plan Noise Element does contain the human reaction to typical vibration levels. Vibration levels with peak particle velocity of 0.0787 inches per second are considered readily perceptible and above 0.1968 in/sec are considered annoying to people in buildings. Further, County of Riverside General Plan Policy N 16.3 identifies a motion velocity perception threshold for vibration due to passing trains of 0.01 inches per second (in/sec) over the range of one to 100 Hz, which is used in this noise study to assess potential impacts due to Project construction-vibration levels. (12)

4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

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

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

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

While the County of Riverside General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts, they do not define the levels at which increases are considered substantial for use under Guideline A. CEQA Appendix G Guideline C applies to nearby public and private airports, if any, and the Project's land use compatibility.

4.1 CEQA GUIDELINES TOPICS NOT FURTHER ANALYZED

The Project's potential impacts under the following topics are determined to be less-than-significant within the Project Initial Study, and are not further discussed in this analysis:

- 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 would the project expose people residing or working in the project area to excessive noise levels;
- For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels;
- Railroad noise;
- Highway noise; or
- Other noise.

4.2 NOISE-SENSITIVE RECEIVERS

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels, and the location of noise-sensitive receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (16) Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding human reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. Thus, an

important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment.

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. The Federal Interagency Committee on Noise (FICON) (17) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes that there is no single noise increase that renders the noise impact significant, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (16) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, FICON identifies a readily perceptible 5 dBA or greater project-related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded.

4.3 NON-NOISE-SENSITIVE RECEIVERS

The County of Riverside General Plan Noise Element, Table N-1, *Land Use Compatibility for Community Noise Exposure* was used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. As previously shown on Exhibit 3-A, the *normally acceptable* exterior noise levels for non-noise-sensitive land uses is 70 dBA CNEL. Noise levels greater than 70 dBA CNEL are considered *conditionally acceptable* per the *Land Use Compatibility for Community Noise Exposure*. (12)

To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *readily perceptible* 5 dBA and *barely perceptible* 3 dBA criteria were used. When the without Project noise levels at the non-noise-sensitive land uses are below the *normally acceptable* 70 dBA CNEL compatibility criteria, a *readily perceptible* 5 dBA or greater noise level increase is considered a significant impact. When the without Project noise levels are greater than the *normally acceptable* 70 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds s for noise-sensitive land uses but instead rely on the County of Riverside General Plan Noise Element, Table N-1, *Land Use Compatibility for Community Noise Exposure normally acceptable* 70 dBA CNEL exterior noise level criteria.

4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-1 shows the significance criteria summary matrix.

OFF-SITE TRAFFIC NOISE

- When the noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.):
    - are less than 60 dBA CNEL and the Project creates a *readily perceptible* 5 dBA CNEL or greater Project-related noise level increase and the resulting noise level would exceed acceptable exterior noise standards; or
    - range from 60 to 65 dBA CNEL and the Project creates a *barely perceptible* 3 dBA CNEL or greater Project-related noise level increase and the resulting noise level would exceed acceptable exterior noise standards; or
    - already exceed 65 dBA CNEL, and the Project creates a community noise level increase of greater than 1.5 dBA CNEL (FICON, 1992).
- When the noise levels at existing and future non-noise-sensitive land uses (e.g., office, commercial, industrial):
    - are less than the County of Riverside General Plan Noise Element, Table N-1, *normally acceptable* 70 dBA CNEL and the Project creates a *readily perceptible* 5 dBA CNEL or greater Project related noise level increase and the resulting noise level would exceed acceptable exterior noise standards; or
    - are greater than the County of Riverside General Plan Noise Element, Table N-1, *normally acceptable* 70 dBA CNEL and the Project creates a *barely perceptible* 3 dBA CNEL or greater Project noise level increase.

OPERATIONAL NOISE & VIBRATION

- If Project-related operational (stationary-source) noise levels exceed the exterior 55 dBA L_{eq} daytime or 45 dBA L_{eq} nighttime noise level standards at nearby sensitive receiver locations (County of Riverside Municipal Code, 9.52.040)
- If the existing ambient noise levels at the nearby noise-sensitive receivers near the Project site:
    - are less than 60 dBA L_{eq} and the Project creates a *readily perceptible* 5 dBA L_{eq} or greater Project-related noise level increase and the resulting noise level would exceed acceptable exterior noise standards; or
    - range from 60 to 65 dBA L_{eq} and the Project creates a *barely perceptible* 3 dBA L_{eq} or greater Project-related noise level increase and the resulting noise level would exceed acceptable exterior noise standards; or
    - already exceed 65 dBA L_{eq} and the Project creates a community noise level increase of greater than 1.5 dBA L_{eq} (FICON, 1992).
- If Project generated operational vibration levels exceed the County of Riverside acceptable vibration standard of 0.01 in/sec RMS at sensitive receiver locations (County of Riverside General Plan, Policy N 16.3).

CONSTRUCTION NOISE & VIBRATION

- If Project-related construction activities create noise levels which exceed the 85 dBA L_{eq} acceptable noise level threshold at the nearby sensitive receiver locations (NIOSH, Criteria for Recommended Standard: Occupational Noise Exposure);
- If short-term Project-generated construction vibration levels exceed the County of Riverside vibration standard of 0.01 in/sec RMS at sensitive receiver locations (County of Riverside General Plan Noise Element, Policy N 16.3).

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Land Use	Condition(s)	Significance Criteria	
			Daytime	Nighttime
Off-Site Traffic	Noise-Sensitive[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase and the resulting noise level would exceed acceptable exterior noise standards	
		If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase and the resulting noise level would exceed acceptable exterior noise standards	
		If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase	
	Non-Noise-Sensitive[1,2]	If ambient is < 70 dBA CNEL	≥ 5 dBA CNEL Project increase and the resulting noise level would exceed acceptable exterior noise standards	
		If ambient is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase and the resulting noise level would exceed acceptable exterior noise standards	
Operational	Noise-Sensitive	Exterior Noise Level Standards[3]	55 dBA L_{eq}	45 dBA L_{eq}
		If ambient is < 60 dBA Leq[1]	≥ 5 dBA L_{eq} Project increase and the resulting noise level would exceed acceptable exterior noise standards	
		If ambient is 60 - 65 dBA Leq[1]	≥ 3 dBA L_{eq} Project increase and the resulting noise level would exceed acceptable exterior noise standards	
		If ambient is > 65 dBA Leq[1]	≥ 1.5 dBA L_{eq} Project increase	
		Vibration Level Threshold[4]	0.01 in/sec RMS	
Construction	Noise-Sensitive	Noise Level Threshold[5]	85 dBA L_{eq}	
		Vibration Level Threshold[4]	0.01 in/sec RMS	

[1] Source: FICON, 1992.
[2] Source: County of Riverside General Plan Noise Element, Table N-1.
[3] Source: County of Riverside General Plan Municipal Code, Section 9.52.040.
[4] Source: County of Riverside General Plan Noise Element, Policy N 16.3.
[5] Acceptable threshold for construction noise based on the Criteria for Recommended Standard: Occupational Noise Exposure prepared by the National Institute for Occupational Safety and Health.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at five locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Wednesday, October 16th, 2019. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (18)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (4) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (3)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (3) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts.

Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the noise levels south of project site on Placentia Avenue in front of single-family home at 23745 Placentia Avenue. The noise levels at this location consist primarily of traffic noise from the I-215 Freeway and Placentia Avenue. The noise level measurements collected show an overall 24-hour exterior noise level of 57.9 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 51.8 dBA L_{eq} with an average nighttime noise level of 50.9 dBA L_{eq}.
- Location L2 represents the noise levels on southwest of project site on Placentia Avenue in front of home at 23551 Placentia Avenue. The ambient noise levels at this location primarily consist of traffic noise from the I-215 Freeway and Placentia Avenue. The noise level measurements collected show an overall 24-hour exterior noise level of 58.3 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 53.8 dBA L_{eq} with an average nighttime noise level of 50.7 dBA L_{eq}.
- Location L3 represents the noise levels west of the project site on Patterson Avenue near existing vacant land and residential homes. The noise level measurements collected show an overall 24-hour exterior noise level of 60.5 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 57.2 dBA L_{eq} with an average nighttime noise level of 52.1 dBA L_{eq}. The noise levels at this location consist primarily of traffic noise from Patterson Avenue.
- Location L4 represents the noise levels southeast of intersection of Walnut Street and Patterson Avenue near existing vacant land. The noise level measurements collected show an overall 24-hour exterior noise level of 62.2 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 57.4 dBA L_{eq} with an average nighttime noise level of 54.7 dBA L_{eq}. The noise levels at this location consist primarily of traffic noise from Patterson Avenue and Walnut Street.
- Location L5 represents the noise in vacant dirt lot west of Patterson avenue across the U-Turn for Christ building. The 24-hour CNEL indicates that the overall exterior noise level is 57.0 dBA CNEL. The energy (logarithmic) average daytime noise level was calculated at 50.7 dBA L_{eq} with an average nighttime noise level of 49.9 dBA L_{eq}. Primary noise levels at this location consist of traffic on Patterson Avenue and church activity from U-Turn for Christ.

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with adjacent roadways, the I-215 Freeway, BNSF railroad lines, and MARB/IPA, in addition to background industrial land use activities. This includes the auto and heavy truck activities on study area roadway segments near the noise level measurement locations. The 24-hour existing noise level measurement results are shown on Table 5-1.

TABLE 5-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		CNEL
		Daytime	Nighttime	
L1	Located south of project site on Placentia Avenue in front of single-family home at 23745 Placentia Avenue.	51.8	50.9	57.9
L2	Located southwest of project site on Placentia Avenue in front of home at 23551 Placentia Avenue.	53.8	50.7	58.3
L3	Located west of project site on Patterson Avenue near existing vacant land and residential homes.	57.2	52.1	60.5
L4	Located southeast of intersection of Walnut Street and Patterson Avenue near existing vacant land.	57.4	54.7	62.2
L5	Located in vacant dirt lot west of Patterson avenue across the U-Turn for Christ building.	50.7	49.9	57.0

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment. Consistent with the County of Riverside General Plan *Land Use Compatibility for Community Noise Exposure* matrix, all transportation related noise levels are presented in terms of the 24-hour CNEL's.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (19) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (20) 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 which flows each hour throughout a 24-hour period. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (21) This methodology is consistent with the County of Riverside Office of Industrial Hygiene *Requirements for Determining and Mitigating Traffic Noise Impacts to Residential Structures*, which specifically requires the FHWA RD-77-108 model to be used in analysis within the County's jurisdiction. (22)

6.2 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site dBA CNEL transportation noise impacts. Table 6-1 identifies the 6 study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications per the County of Riverside General Plan Circulation Element, and the posted vehicle speeds. Where posted vehicle speeds are unavailable, the 40-mph speed identified in the County of Riverside Office of Industrial Hygiene Noise Study Guidelines is used. The ADT volumes used in this study are presented on Table 6-2 are based on the *Placentia Logistics Traffic Impact Analysis*, prepared by Urban Crossroads, Inc. for the following traffic scenarios under both Without and With Placentia Street Interchange alternatives: Existing 2019, Existing plus Ambient Growth (EA) 2021, EA plus Cumulative (EAC) 2021, and Horizon Year 2040 conditions. (2) The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. The *General Plan Noise Element* (12) requires that future on-site traffic noise impacts be assessed using the maximum capacity design standard for highways and major roads. However, this analysis relies on a comparative analysis of the off-site traffic noise

impacts, without and with project ADT traffic volumes from the Project traffic study. The use of the maximum capacity design standards is typically reserved for determining the future long-range on-site traffic noise impacts, not the comparative contributions associated with the off-site Project traffic noise level impacts.

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Receiving Land Use[1]	Distance from Centerline to Receiving Land Use (Feet)[2]	Vehicle Speed (mph)
1	Harvill Av.	n/o Dwy. 3	BP/LI	59'	50
2	Harvill Av.	n/o Placentia St.	BP/LI	59'	50
3	Harvill Av.	s/o Placentia St.	BP/LI	59'	50
4	Placentia St.	w/o Dwy. 2	BP/Residential	50'	40
5	Placentia St.	w/o Harvill Av.	BP	50'	40
6	Placentia St.	e/o Harvill Av.	LI	64'	50

[1] Sources: Mead Valley Area Plan, Land Use Plan, Figure 3 and Nearmap aerial imagery. "BP" Business Park, "LI" Light Industrial
[2] Distance to receiving land use is based upon the right-of-way distances for each functional roadway classification provided in the General Plan Circulation Element.

To quantify the off-site noise levels, the Project related truck trips were added to the heavy truck category in the FHWA noise prediction model. The addition of the Project related truck trips increases the percentage of heavy trucks in the vehicle mix. This approach recognizes that the FHWA noise prediction model is significantly influenced by the number of heavy trucks in the vehicle mix. Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits. The daily Project truck trip-ends were assigned to the individual off-site study area roadway segments based on the Project truck trip distribution percentages documented in the *Traffic Impact Analysis*. Using the Project truck trips in combination with the Project trip distribution, Urban Crossroads, Inc. calculated the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Table 6-4 shows the traffic flow by vehicle type (vehicle mix) used for all without Project traffic scenarios, and Tables 6-5 to 6-9 show the vehicle mixes used for the with Project traffic scenarios.

Due to the added Project truck trips, the increase in Project traffic volumes and the distributions of trucks on the study area road segments, the percentage of autos, medium trucks and heavy trucks will vary for each of the traffic scenarios. This explains why the existing and future traffic volumes and vehicle mixes vary between seemingly identical study area roadway segments. A review of the average daily traffic volumes provided on Table 6-2 shows that two of the six study area roadway segments have very low traffic volumes for EA and EAC conditions. When the Project traffic is added to the EA and EAC conditions, they represent a disproportionately high percentage of heavy trucks. Tables 6-5, 6-6 and 6-7 all show a higher percentage of heavy truck due to the Project. However, overtime as the overall background traffic increases, the percentage of heavy trucks relative to the total traffic mix is reduced. Table 6-8 shows how the overall percentage of heavy trucks is reduced due to an increase in the total traffic for long range Horizon Year 2040 conditions.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]							
			Existing 2019		Existing + Ambient Growth (EA)		EA + Cumulative Development (EAC)		Horizon Year 2040	
			Without Project	With Project	Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Harvill Av.	n/o Dwy. 3	14,760	14,852	22,175	22,266	27,342	27,433	27,342	27,380
2	Harvill Av.	n/o Placentia St.	14,968	15,104	22,175	22,311	27,342	27,478	27,342	27,399
3	Harvill Av.	s/o Placentia St.	9,349	9,406	13,688	13,745	17,618	17,675	17,618	17,709
4	Placentia St.	w/o Dwy. 2	399	751	415	767	453	805	3,759	3,812
5	Placentia St.	w/o Harvill Av.	399	872	415	889	2,141	2,615	3,759	3,816
6	Placentia St.	e/o Harvill Av.	9,572	9,955	21,359	21,742	22,370	22,753	22,370	22,427

[1] Source: Placentia Logistics Traffic Impact Analysis, Urban Crossroads, Inc.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	75.55%	13.96%	10.49%	100.00%
Medium Trucks	48.91%	2.18%	48.91%	100.00%
Heavy Trucks	47.30%	5.40%	47.30%	100.00%

[1] Source: County of Riverside Office of Industrial Hygiene (Major, Arterial, Urban Arterial). Values rounded to the nearest one-hundredth.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: WITHOUT PROJECT CONDITIONS VEHICLE MIX

Classification	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
All Segments	98.02%	1.30%	0.68%	100.00%

Based on an existing vehicle mix count taken at the intersection of Harvill Avenue and Placentia Avenue. Vehicle mix percentage values rounded to the nearest one-hundredth (Placentia Logistics Traffic Impact Analysis, Urban Crossroads, Inc.).

TABLE 6-5: EXISTING WITH PROJECT CONDITIONS VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Harvill Av.	n/o Dwy. 3	97.93%	1.31%	0.76%	100.00%
2	Harvill Av.	n/o Placentia St.	97.64%	1.38%	0.98%	100.00%
3	Harvill Av.	s/o Placentia St.	98.03%	1.29%	0.68%	100.00%
4	Placentia St.	w/o Dwy. 2	84.03%	4.15%	11.82%	100.00%
5	Placentia St.	w/o Harvill Av.	86.26%	3.57%	10.17%	100.00%
6	Placentia St.	e/o Harvill Av.	96.74%	1.56%	1.70%	100.00%

[1] Source: Placentia Logistics Traffic Impact Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-6: EA WITHOUT INTERCHANGE WITH PROJECT CONDITIONS VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Harvill Av.	n/o Dwy. 3	97.96%	1.30%	0.73%	100.00%
2	Harvill Av.	n/o Placentia St.	97.76%	1.35%	0.88%	100.00%
3	Harvill Av.	s/o Placentia St.	98.03%	1.29%	0.68%	100.00%
4	Placentia St.	w/o Dwy. 2	84.33%	4.09%	11.58%	100.00%
5	Placentia St.	w/o Harvill Av.	86.48%	3.53%	9.99%	100.00%
6	Placentia St.	e/o Harvill Av.	97.44%	1.42%	1.15%	100.00%

[1] Source: Placentia Logistics Traffic Impact Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-7: EAC WITHOUT INTERCHANGE WITH PROJECT CONDITIONS VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Harvill Av.	n/o Dwy. 3	97.97%	1.30%	0.72%	100.00%
2	Harvill Av.	n/o Placentia St.	97.81%	1.34%	0.85%	100.00%
3	Harvill Av.	s/o Placentia St.	98.03%	1.29%	0.68%	100.00%
4	Placentia St.	w/o Dwy. 2	84.97%	3.96%	11.07%	100.00%
5	Placentia St.	w/o Harvill Av.	94.10%	2.06%	3.85%	100.00%
6	Placentia St.	e/o Harvill Av.	97.46%	1.41%	1.13%	100.00%

[1] Source: Placentia Logistics Traffic Impact Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

TABLE 6-8: HY 2040 WITHOUT INTERCHANGE WITH PROJECT CONDITIONS VEHICLE MIX

ID	Roadway	Segment	With Project[1]			
			Autos	Medium Trucks	Heavy Trucks	Total[2]
1	Harvill Av.	n/o Dwy. 3	98.02%	1.29%	0.68%	100.00%
2	Harvill Av.	n/o Placentia St.	98.03%	1.29%	0.68%	100.00%
3	Harvill Av.	s/o Placentia St.	97.95%	1.31%	0.75%	100.00%
4	Placentia St.	w/o Dwy. 2	97.66%	1.36%	0.99%	100.00%
5	Placentia St.	w/o Harvill Av.	98.05%	1.28%	0.67%	100.00%
6	Placentia St.	e/o Harvill Av.	98.03%	1.29%	0.68%	100.00%

[1] Source: Placentia Logistics Traffic Impact Analysis, Urban Crossroads, Inc.
[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

6.3 VIBRATION ASSESSMENT

This analysis focuses on the potential ground-borne vibration associated with vehicular traffic and construction activities. Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity.

However, while vehicular traffic is rarely perceptible, construction has the potential to result in varying degrees of temporary ground vibration, depending on the specific construction activities and equipment used. Ground vibration levels associated with various types of construction equipment are summarized on Table 6-9. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential Project

construction vibration levels using the following vibration assessment methods defined by the FTA. The FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 6-9: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

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

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

7 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with the proposed Project, noise contours were developed based on the *Placentia Logistics Traffic Impact Analysis*. (2) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

- Existing Without / With Project: This scenario refers to the existing present-day 2019 noise conditions, without and with the development Project. The existing with Project scenario will not actually occur since the Project would not be fully constructed and operational until opening year 2021 conditions.
- Existing plus Ambient (EA) Without / With Project: This scenario refers to the existing present-day 2019 noise conditions plus the estimated 2 years of background growth in ambient traffic conditions without and with the development of the full Project.
- Existing plus Ambient plus Cumulative (EAC) 2021 Without / With Project: This scenario refers to the existing plus ambient plus cumulative noise conditions at 2021 without and with the proposed Project
- Horizon Year 2040 Without / With Project: This scenario refers to the future horizon year 2040 conditions without and with the proposed Project. This scenario represents buildout of the General Plan land use and includes all cumulative projects identified in the Traffic Impact Analysis.

7.1 TRAFFIC NOISE CONTOURS

Noise contours were used to assess the Project's incremental 24-hour dBA CNEL traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA CNEL noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area.

Tables 7-1 through 7-8 present a summary of the exterior dBA CNEL traffic noise levels. All scenarios do not include barrier attenuation. Roadway segments are analyzed from the without Project to the with Project conditions in each of the following timeframes: Existing, Existing plus Ambient Growth (EA), EA plus Cumulative (EAC) and Horizon Year 2040 conditions. Appendix 7.1 includes a summary of the traffic noise level contours for each of the traffic scenarios.

TABLE 7-1: EXISTING WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Dwy. 3	BP/LI	70.3	62	133	286
2	Harvill Av.	n/o Placentia St.	BP/LI	70.3	62	134	288
3	Harvill Av.	s/o Placentia St.	BP/LI	68.3	RW	98	211
4	Placentia St.	w/o Dwy. 2	BP/Residential	53.3	RW	RW	RW
5	Placentia St.	w/o Harvill Av.	BP	53.3	RW	RW	RW
6	Placentia St.	e/o Harvill Av.	LI	68.0	RW	102	219

[1] Sources: Mead Valley Area Plan, Land Use Plan, Figure 3 and Nearmap aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Dwy. 3	BP/LI	70.4	63	136	293
2	Harvill Av.	n/o Placentia St.	BP/LI	70.9	68	147	316
3	Harvill Av.	s/o Placentia St.	BP/LI	68.3	RW	98	211
4	Placentia St.	w/o Dwy. 2	BP/Residential	64.5	RW	RW	99
5	Placentia St.	w/o Harvill Av.	BP	64.5	RW	RW	100
6	Placentia St.	e/o Harvill Av.	LI	69.8	RW	134	290

[1] Sources: Mead Valley Area Plan, Land Use Plan, Figure 3 and Nearmap aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: EA WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Dwy. 3	BP/LI	72.0	81	174	375
2	Harvill Av.	n/o Placentia St.	BP/LI	72.0	81	174	375
3	Harvill Av.	s/o Placentia St.	BP/LI	70.0	59	126	272
4	Placentia St.	w/o Dwy. 2	BP/Residential	53.5	RW	RW	RW
5	Placentia St.	w/o Harvill Av.	BP	53.5	RW	RW	RW
6	Placentia St.	e/o Harvill Av.	LI	71.5	81	174	375

[1] Sources: Mead Valley Area Plan, Land Use Plan, Figure 3 and Nearmap aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: EA WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Dwy. 3	BP/LI	72.2	82	177	381
2	Harvill Av.	n/o Placentia St.	BP/LI	72.5	86	185	399
3	Harvill Av.	s/o Placentia St.	BP/LI	70.0	59	126	272
4	Placentia St.	w/o Dwy. 2	BP/Residential	64.5	RW	RW	100
5	Placentia St.	w/o Harvill Av.	BP	64.5	RW	RW	100
6	Placentia St.	e/o Harvill Av.	LI	72.4	93	200	431

[1] Sources: Mead Valley Area Plan, Land Use Plan, Figure 3 and Nearmap aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: EAC WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Dwy. 3	BP/LI	73.0	93	200	431
2	Harvill Av.	n/o Placentia St.	BP/LI	73.0	93	200	431
3	Harvill Av.	s/o Placentia St.	BP/LI	71.0	69	149	322
4	Placentia St.	w/o Dwy. 2	BP/Residential	53.8	RW	RW	RW
5	Placentia St.	w/o Harvill Av.	BP	60.6	RW	RW	55
6	Placentia St.	e/o Harvill Av.	LI	71.7	83	179	387

[1] Sources: Mead Valley Area Plan, Land Use Plan, Figure 3 and Nearmap aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: EAC WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Dwy. 3	BP/LI	73.0	94	203	437
2	Harvill Av.	n/o Placentia St.	BP/LI	73.3	98	211	454
3	Harvill Av.	s/o Placentia St.	BP/LI	71.1	69	149	322
4	Placentia St.	w/o Dwy. 2	BP/Residential	64.5	RW	RW	100
5	Placentia St.	w/o Harvill Av.	BP	65.8	RW	56	121
6	Placentia St.	e/o Harvill Av.	LI	72.6	95	205	441

[1] Sources: Mead Valley Area Plan, Land Use Plan, Figure 3 and Nearmap aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-7: HORIZON YEAR 2040 WITHOUT PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Dwy. 3	BP/LI	73.0	93	200	431
2	Harvill Av.	n/o Placentia St.	BP/LI	73.0	93	200	431
3	Harvill Av.	s/o Placentia St.	BP/LI	71.0	69	149	322
4	Placentia St.	w/o Dwy. 2	BP/Residential	63.0	RW	RW	80
5	Placentia St.	w/o Harvill Av.	BP	63.0	RW	RW	80
6	Placentia St.	e/o Harvill Av.	LI	71.7	83	179	387

[1] Sources: Mead Valley Area Plan, Land Use Plan, Figure 3 and Nearmap aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-8: HORIZON YEAR 2040 WITH PROJECT CONDITIONS NOISE CONTOURS

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[2]	Distance to Contour from Centerline (Feet)		
					70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Harvill Av.	n/o Dwy. 3	BP/LI	73.0	93	200	431
2	Harvill Av.	n/o Placentia St.	BP/LI	73.0	93	200	431
3	Harvill Av.	s/o Placentia St.	BP/LI	71.2	71	153	329
4	Placentia St.	w/o Dwy. 2	BP/Residential	63.7	RW	RW	89
5	Placentia St.	w/o Harvill Av.	BP	63.1	RW	RW	80
6	Placentia St.	e/o Harvill Av.	LI	71.7	83	180	387

[1] Sources: Mead Valley Area Plan, Land Use Plan, Figure 3 and Nearmap aerial imagery.
[2] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING CONDITIONS 2019 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

An analysis of existing traffic noise levels plus traffic noise generated by the proposed Project has been included in this report for informational purposes. However, the analysis of existing traffic noise levels plus traffic noise generated by the proposed Project scenario will not actually occur since the Project would not be fully constructed and operational until year 2021 cumulative conditions.

As shown on Table 7-9, under the Existing Condition with Project scenario, the Project would generate a noise level increase of up to 11.2 dBA CNEL on the study area roadway segments. However, Project vehicular-source noise contributions would not cause acceptable exterior noise standards to be exceeded. Nor would Project vehicular-source noise result in unacceptable incremental increases when exterior noise standards are already exceeded. Based on the significance criteria in Section 4, the Project-related noise level increases would therefore be *less than significant*.

Note that the Existing and Existing plus Ambient (EA) with Project conditions both assume the Project will be built and fully occupied for the purposes of analysis and consistency with the *Placentia Logistics Traffic Impact Analysis*. (2) The long-range conditions under EA plus Cumulative and Horizon Year 2040 scenarios represent the expected cumulative conditions without and with Project traffic, and therefore, these long-range scenarios are used to determine the significance of Project off-site traffic noise level increases on the study area roadway segments, per CEQA Guideline A as previously discussed in Section 4.

7.3 EA PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

An analysis of EA traffic noise levels plus traffic noise generated by the proposed Project has been included in this report for informational purposes. However, the analysis of EA traffic noise levels plus traffic noise generated by the proposed Project scenario will not actually occur since the Project would not be fully constructed and operational until year 2021 cumulative conditions.

As shown on Table 7-10, under the EA Condition with Project scenario, the Project would generate a noise level increase of up to 11.1 dBA CNEL on the study area roadway segments. However, Project vehicular-source noise contributions would not cause acceptable exterior noise standards to be exceeded. Nor would Project vehicular-source noise result in unacceptable incremental increases when exterior noise standards are already exceeded. Based on the significance criteria in Section 4, the Project-related noise level increases would therefore be *less than significant*.

Note that the Existing and Existing plus Ambient (EA) with Project conditions both assume the Project will be built and fully occupied for the purposes of analysis and consistency with the *Placentia Logistics Traffic Impact Analysis*. (2) The long-range conditions under EA plus Cumulative and Horizon Year 2040 scenarios represent the expected cumulative conditions without and with Project traffic, and therefore, these long-range scenarios are used to determine the significance of Project off-site traffic noise level increases on the study area roadway segments, per CEQA Guideline A as previously discussed in Section 4.

7.4 EAC 2021 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

As shown on Table 7-11, under the EAC Condition with Project scenario, the Project would generate a noise level increase of up to 10.7 dBA CNEL on the study area roadway segments. However, Project vehicular-source noise contributions would not cause acceptable exterior noise standards to be exceeded. Nor would Project vehicular-source noise result in unacceptable incremental increases when exterior noise standards are already exceeded. Based on the significance criteria in Section 4, the Project-related noise level increases would therefore be *less than significant*.

7.5 HORIZON YEAR 2040 PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

As shown on Table 7-12, under the Horizon Year 2040 Condition with Project scenario, the Project would generate a noise level increase of up to 0.7 dBA CNEL on the study area roadway segments. However, Project vehicular-source noise contributions would not cause acceptable exterior noise standards to be exceeded. Nor would Project vehicular-source noise result in unacceptable incremental increases when exterior noise standards are already exceeded. Based on the significance criteria in Section 4, the Project-related noise level increases would therefore be *less than significant*.

TABLE 7-9: EXISTING 2019 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]			Exterior Noise Standard	Exceeds Exterior Noise Standards	Threshold[2]	
				No Project	With Project	Project Addition			Limit	Exceeded?
1	Harvill Av.	n/o Dwy. 3	BP/LI	70.3	70.4	0.2	70	Yes	3.0	No
2	Harvill Av.	n/o Placentia St.	BP/LI	70.3	70.9	0.6	70	Yes	3.0	No
3	Harvill Av.	s/o Placentia St.	BP/LI	68.3	68.3	0.0	70	No	n/a	n/a
4	Placentia St.	w/o Dwy. 2	BP/Residential	53.3	64.5	11.2	65	No	n/a	n/a
5	Placentia St.	w/o Harvill Av.	BP	53.3	64.5	11.2	70	No	n/a	n/a
6	Placentia St.	e/o Harvill Av.	LI	68.0	69.8	1.8	70	No	n/a	n/a

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Significance Criteria (Section 4).

TABLE 7-10: EA 2021 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]			Exterior Noise Standard	Exceeds Exterior Noise Standards	Threshold[2]	
				No Project	With Project	Project Addition			Limit	Exceeded?
1	Harvill Av.	n/o Dwy. 3	BP/LI	72.0	72.2	0.1	70	Yes	3.0	No
2	Harvill Av.	n/o Placentia St.	BP/LI	72.0	72.5	0.4	70	Yes	3.0	No
3	Harvill Av.	s/o Placentia St.	BP/LI	70.0	70.0	0.0	70	No	n/a	No
4	Placentia St.	w/o Dwy. 2	BP/Residential	53.5	64.5	11.0	65	No	n/a	n/a
5	Placentia St.	w/o Harvill Av.	BP	53.5	64.5	11.1	70	No	n/a	n/a
6	Placentia St.	e/o Harvill Av.	LI	71.5	72.4	0.9	70	Yes	3.0	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Significance Criteria (Section 4).

TABLE 7-11: EAC 2021 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]			Exterior Noise Standard	Exceeds Exterior Noise Standards	Threshold[2]	
				No Project	With Project	Project Addition			Limit	Exceeded?
1	Harvill Av.	n/o Dwy. 3	BP/LI	73.0	73.0	0.1	70.0	Yes	3.0	No
2	Harvill Av.	n/o Placentia St.	BP/LI	73.0	73.3	0.3	70.0	Yes	3.0	No
3	Harvill Av.	s/o Placentia St.	BP/LI	71.0	71.1	0.0	70.0	Yes	3.0	No
4	Placentia St.	w/o Dwy. 2	BP/Residential	53.8	64.5	10.7	65.0	No	n/a	n/a
5	Placentia St.	w/o Harvill Av.	BP	60.6	65.8	5.2	70.0	No	n/a	n/a
6	Placentia St.	e/o Harvill Av.	LI	71.7	72.6	0.9	70.0	Yes	3.0	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Significance Criteria (Section 4).

TABLE 7-12: HORIZON YEAR 2040 WITH PROJECT TRAFFIC NOISE LEVEL INCREASES

ID	Road	Segment	Receiving Land Use[1]	CNEL at Receiving Land Use (dBA)[1]			Exterior Noise Standard	Exceeds Exterior Noise Standards	Threshold[2]	
				No Project	With Project	Project Addition			Limit	Exceeded?
1	Harvill Av.	n/o Dwy. 3	BP/LI	73.0	73.0	0.0	70.0	Yes	3.0	No
2	Harvill Av.	n/o Placentia St.	BP/LI	73.0	73.0	0.0	70.0	Yes	3.0	No
3	Harvill Av.	s/o Placentia St.	BP/LI	71.0	71.2	0.1	70.0	Yes	3.0	No
4	Placentia St.	w/o Dwy. 2	BP/Residential	63.0	63.7	0.7	65.0	No	n/a	n/a
5	Placentia St.	w/o Harvill Av.	BP	63.0	63.1	0.0	70.0	No	n/a	n/a
6	Placentia St.	e/o Harvill Av.	LI	71.7	71.7	0.0	70.0	Yes	3.0	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Significance Criteria (Section 4).

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8 SENSITIVE RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 8-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, seven receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project site. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2.

Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

R1: Located approximately 99 feet south of the Project site, R1 represents existing residence at 23745 Placentia Avenue. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing residence located approximately 646 feet southwest of the Project site at 23551 Placentia Ave. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the existing residence located approximately 1,223 feet west of the Project site at 20441 Patterson Avenue. A 24-hour noise measurement near this location, L3, is used to describe the existing ambient noise environment.

R4: Location R4 represents the existing residence located approximately 1,192 feet west of the Project site at 20401 Patterson Avenue. A 24-hour noise measurement near this location, L3, is used to describe the existing ambient noise environment.

R5: Location R5 represents the existing residence located approximately 1,160 feet west of the Project site at 20337 Patterson Avenue. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

R6: Location R6 represents the existing residence located approximately 1,234 feet northwest of the of the Project site at 20281 Patterson Avenue. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

R7: Location R7 represents an existing residence located approximately 1,102 feet northwest of the Project site at 20240 Patterson Avenue. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

EXHIBIT 8-A: SENSITIVE RECEIVER LOCATIONS

9 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearby receiver locations, identified in Section 8, resulting from the operation of the proposed Placentia Logistics Project. Exhibit 9-A identifies the noise source locations used to assess the hourly average L_{eq} operational noise levels. The Project site plan and elevations suggest that the building will be 44 to 46-feet high.

9.1 OPERATIONAL NOISE SOURCES

At the time this noise analysis was prepared, the future tenants of the proposed Project were unknown. Therefore, this operational noise analysis is intended to describe noise level impacts associated with the expected typical of daytime and nighttime activities at the Project site. To present the potential worst-case noise conditions, this analysis assumes the Project would be operational 24 hours per day, seven days per week. Consistent with similar warehouse uses, the Project business operations would primarily be conducted within the enclosed buildings, except for traffic movement, parking, as well as loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: loading dock activity, roof-top air conditioning units, and parking lot vehicle movements.

9.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities to represent the noise levels expected with the development of the proposed Project. This section provides a detailed description of the reference noise level measurements shown on Table 9-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the loading dock activity, roof-top air conditioning units, and parking lot vehicle movements all operating continuously. These sources of noise activity will likely vary throughout the day.

EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS

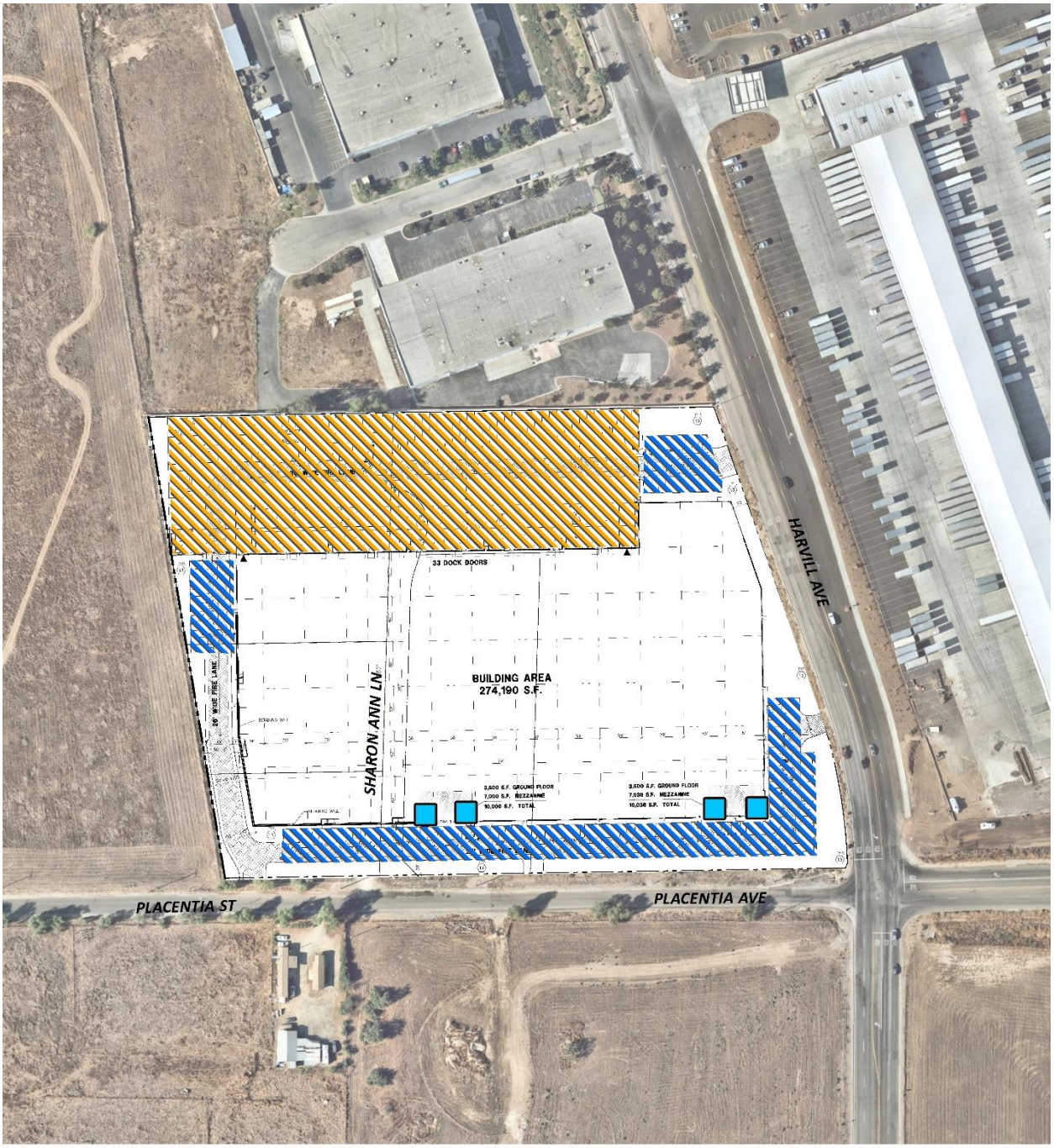

TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	Duration (hh:mm:ss)	Ref. Distance (Feet)	Noise Source Height (Feet)	Min./Hour[4]		Reference Noise Level (dBA L_{eq})		Sound Power Level (dBA)[5]
				Day	Night	@ Ref. Dist.	@ 50 Feet	
Loading Dock Activity[1]	00:15:00	30'	8'	60	60	67.2	62.8	103.4
Roof-Top Air Conditioning Units[2]	96:00:00	5'	5'	39	28	77.2	57.2	88.9
Parking Lot Vehicle Movements[3]	01:00:00	10'	5'	60	60	52.2	41.7	79.0

[1] As measured by Urban Crossroads, Inc. at the Motivational Fulfillment & Logistics Services distribution facility in the City of Chino.
[2] As measured by Urban Crossroads, Inc. at the Santee Walmart located at 170 Town Center Parkway.
[3] As measured by Urban Crossroads, Inc. at the Panasonic Avionics Corporation parking lot in the City of Lake Forest.
[4] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site. "Day" = 7:00 a.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.
[5] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings.

9.2.1 MEASUREMENT PROCEDURES

The reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precisions sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (18)

9.2.2 LOADING DOCK ACTIVITY

Short-term reference noise level measurements were collected by Urban Crossroads, Inc. at the Motivational Fulfillment & Logistics Services distribution facility located at 6810 Bickmore Avenue in the City of Chino. The noise level measurements represent the typical weekday dry goods logistics warehouse operation in a single building with a loading dock area on the western side of the building façade. Up to ten trucks were observed in the loading dock area including a combination of tractor trailer semi-trucks, two-axle delivery trucks, and background forklift operations.

The unloading/docking activity noise level measurement was taken over a fifteen-minute period and represents multiple noise sources taken from the center of loading dock activities generating a reference noise level of 62.8 dBA L_{eq} at a uniform reference distance of 50 feet. At this measurement location, the noise sources associated with employees unloading a docked truck container included the squeaking of the truck's shocks when weight was removed from the truck, employees playing music over a radio, as well as a forklift horn and backup alarm. In addition, during the noise level measurement a truck entered the loading dock area and proceeded to reverse and dock in a nearby loading bay, adding truck engine, idling, and air brakes noise, in addition to on-going idling of an already docked truck

9.2.3 ROOF-TOP AIR CONDITIONING UNITS

To assess the impacts created by the roof-top air conditioning units at the Project buildings, reference noise levels measurements were taken over a four-day total duration at the Santee Walmart. Located at 170 Town Center Parkway in the City of Santee, the noise level measurements describe mechanical roof-top air conditioning units on the roof of an existing Walmart store with additional roof-top units operating in the background. The reference noise level represents Lennox SCA120 series 10-ton model packaged air conditioning units. At 5 feet from the closest roof-top air conditioning unit, the highest exterior noise level from all four days of the measurement period was measured at 77.2 dBA L_{eq}. Using the uniform reference distance of 50 feet, the noise level is 57.2 dBA L_{eq}.

Based on the typical operating conditions observed over a four-day measurement period, the roof-top air conditioning units are estimated to operate for and average 39 minutes per hour during the daytime hours, and 28 minutes per hour during the nighttime hours. These operating conditions reflect peak summer cooling requirements with measured temperatures approaching 96 degrees Fahrenheit (°F) with average daytime temperatures of 82°F. For this noise analysis, the air conditioning units are expected to be located on the roof of the Project buildings. The noise attenuation provided by the existing parapet wall is not reflected in this reference noise level measurement.

9.2.4 PARKING LOT VEHICLE MOVEMENTS (AUTOS)

To determine the noise levels associated with parking lot vehicle movements, Urban Crossroads collected reference noise level measurements over a 24-hour period at the parking lot for the Panasonic Avionics Corporation in the City of Lake Forest. The peak hour of activity measured over the 24-hour noise level measurement period occurred between 12:00 p.m. to 1:00 p.m., or the typical lunch hour for employees working in the area. The measured reference noise level at 50 feet from parking lot vehicle movements was measured at 41.7 dBA L_{eq}. The parking lot noise levels are mainly due to cars pulling in and out of spaces during peak lunch hour activity and employees talking. Noise associated with parking lot vehicle movements is expected to operate for the entire hour (60 minutes).

9.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze the noise level of multiple types of noise sources and calculates the noise levels at any location using the spatially accurate Project site plan and includes the effects of topography, buildings, and multiple barriers in its calculations using the latest standards to predict outdoor noise impacts. Appendix 9.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

Using the spatially accurate Project site plan and flown aerial imagery and point cloud elevation data from Nearmap, a CadnaA noise prediction model of the Project study area was developed. The noise model provides a three-dimensional representation of the Project study area using the following key data inputs:

- Ground absorption;
- Reference noise level sources by type (area, point, etc.) and noise source height;
- Multiple noise receiver locations and heights;
- Topography and earthen berms;
- Barrier and building heights.

Using the ISO 9613 protocol, the CadnaA noise prediction model will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level calculations at each receiver location and the partial noise level contributions by noise source. The reference sound power level (PWL) for the highest noise source expected at the Project site was input into the CadnaA noise prediction model. While sound pressure levels (e.g. L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (PWL) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish as a result of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment.

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. Hard site conditions are used in the operational noise analysis which result in noise levels that attenuate (or decrease) at a rate of 6 dBA for each doubling of distance from a point source, based on existing conditions in the Project study area. A default ground attenuation factor of 1.0 was used in the CadnaA noise analysis to account for hard site conditions.

9.4 PROJECT OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the proposed Project operations that include loading dock activity, roof-top air conditioning units, and parking lot vehicle movements, Urban Crossroads, Inc. calculated the operational source noise levels that are expected to be generated at the Project site and the Project-related noise level increases that would be experienced at each of the sensitive receiver locations. Tables 9-2 shows the Project operational noise levels during the daytime hours of 7:00 a.m. to 10:00 p.m. The daytime hourly noise levels at the off-site receiver locations are expected to range from 38.5 to 43.3 dBA L_{eq}.

TABLE 9-2: DAYTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1,2]	Operational Noise Levels by Receiver Location (dBA Leq)						
	R1	R2	R3	R4	R5	R6	R7
Loading Dock Activity	30.1	37.7	41.3	39.7	42.0	41.8	38.8
Roof-Top Air Conditioning Units	42.9	30.1	25.8	25.6	25.3	24.8	25.0
Parking Lot Vehicle Movements	29.1	20.5	21.6	18.7	21.3	20.6	15.8
Total (All Noise Sources)	**43.3**	**38.5**	**41.5**	**39.9**	**42.1**	**41.9**	**39.0**

[1] See Exhibit 9-A for the noise source locations.
[2] CadnaA noise model calculations are included in Appendix 9.1.

Tables 9-3 shows the Project operational noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 38.2 to 42.1 dBA L_{eq}. The differences between the daytime and nighttime noise levels is largely related to the duration of noise activity (Table 9-1). Appendix 9.1 includes the detailed noise model inputs including the existing perimeter walls used to estimate the Project operational noise levels presented in this section.

TABLE 9-3: NIGHTTIME PROJECT OPERATIONAL NOISE LEVELS

Noise Source[1,2]	Operational Noise Levels by Receiver Location (dBA Leq)						
	R1	R2	R3	R4	R5	R6	R7
Loading Dock Activity	30.1	37.7	41.3	39.7	42.0	41.8	38.8
Roof-Top Air Conditioning Units	40.5	27.7	23.4	23.2	22.9	22.4	22.6
Parking Lot Vehicle Movements	29.1	20.5	21.6	18.7	21.3	20.6	15.8
Total (All Noise Sources)	**41.2**	**38.2**	**41.4**	**39.8**	**42.1**	**41.9**	**38.9**

[1] See Exhibit 9-A for the noise source locations.
[2] CadnaA noise model calculations are included in Appendix 9.1.

9.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

To demonstrate compliance with local noise regulations, the Project-only operational noise levels are evaluated against exterior noise level thresholds based on the County of Riverside exterior noise level standards at nearby noise-sensitive receiver locations. Table 9-5 shows the operational noise levels associated with Placentia Logistics Project will satisfy the County of Riverside 55 dBA L_{eq} daytime and 45 dBA L_{eq} nighttime exterior noise level standards at all nearby receiver locations. Therefore, the operational noise impacts are considered *less than significant* at the nearby noise-sensitive receiver locations.

TABLE 9-4: OPERATIONAL NOISE LEVEL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	43.3	41.2	55	45	No	No
R2	38.5	38.2	55	45	No	No
R3	41.5	41.4	55	45	No	No
R4	39.9	39.8	55	45	No	No
R5	42.1	42.1	55	45	No	No
R6	41.9	41.9	55	45	No	No
R7	39.0	38.9	55	45	No	No

[1] See Exhibit 8-A for the receiver locations.
[2] Proposed Project operational noise levels as shown on Tables 9-2 and 9-3.
[3] Exterior noise level standards for residential land use, as shown on Table 4-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

9.6 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (4) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describe the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime and nighttime ambient conditions are presented on Tables 9-5 and 9-6, respectively. As indicated on Tables 9-5 and 9-6, the Project will generate an daytime and nighttime operational noise level increases ranging from 0.1 to 0.7 dBA L_{eq} at the nearby receiver locations. Project-related operational noise level increases will satisfy the operational noise level increase significance criteria presented in Table 4-1. Therefore, the incremental Project operational noise level increase is considered *less than significant* at all receiver locations.

TABLE 9-4: PROJECT DAYTIME NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Noise Standard	Increase Criteria[7]	Increase Criteria Exceeded?
R1	43.3	L1	51.8	52.4	0.6	65	5	No
R2	38.5	L2	53.8	53.9	0.1	65	5	No
R3	41.5	L3	57.2	57.3	0.1	65	5	No
R4	39.9	L3	57.2	57.3	0.1	65	5	No
R5	42.1	L4	57.4	57.5	0.1	65	5	No
R6	41.9	L4	57.4	57.5	0.1	65	5	No
R7	39.0	L4	57.4	57.5	0.1	65	5	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project daytime operational noise levels as shown on Table 9-2.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

TABLE 9-5: PROJECT NIGHTTIME NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Noise Standard	Increase Criteria[7]	Increase Criteria Exceeded?
R1	43.3	L1	50.9	51.6	0.7	45	5	No
R2	38.5	L2	50.7	51.0	0.3	45	5	No
R3	41.5	L3	52.1	52.5	0.4	45	5	No
R4	39.9	L3	52.1	52.4	0.3	45	5	No
R5	42.1	L4	54.7	54.9	0.2	45	5	No
R6	41.9	L4	54.7	54.9	0.2	45	5	No
R7	39.0	L4	54.7	54.8	0.1	45	5	No

[1] See Exhibit 8-A for the receiver locations.
[2] Total Project nighttime operational noise levels as shown on Table 9-3.
[3] Reference noise level measurement locations as shown on Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown on Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance increase criteria as shown on Table 4-1.

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10 CONSTRUCTION NOISE AND VIBRATION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 10-A shows the construction noise source locations in relation to the nearby sensitive receiver locations previously described in Section 8.

10.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment is expected to occur in the following stages, based on the *Placentia Logistics Air Quality Impact Analysis* for the Project: (23)

- Demolition
- Site Preparation
- Grading
- Building Construction
- Architectural Coating
- Paving

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

10.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project construction noise levels, measurements were collected for similar activities at several construction sites. Table 10-1 provides a summary of the construction reference noise level measurements. Since the reference noise levels were collected at varying distances of 30 feet and 50 feet, all construction noise level measurements presented on Table 10-1 have been adjusted for consistency to describe a uniform reference distance of 50 feet.

EXHIBIT 10-A: CONSTRUCTION NOISE SOURCE LOCATIONS

TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS

ID	Noise Source	Duration (h:mm:ss)	Reference Distance From Source (Feet)	Reference Noise Levels @ Reference Distance (dBA L_{eq})	Reference Noise Levels @ 50 Feet (dBA L_{eq})[7]
1	Truck Pass-Bys & Dozer Activity[1]	0:01:15	30'	63.6	59.2
2	Dozer Activity[1]	0:01:00	30'	68.6	64.2
3	Construction Vehicle Maintenance Activities[2]	0:01:00	30'	71.9	67.5
4	Foundation Trenching[2]	0:01:01	30'	72.6	68.2
5	Rough Grading Activities[2]	0:05:00	30'	77.9	73.5
6	Framing[3]	0:02:00	30'	66.7	62.3
7	Dozer Pass-By[4]	0:00:32	30'	84.0	79.6
8	Concrete Mixer Truck Movements[5]	0:01:00	50'	71.2	71.2
9	Concrete Paver Activities[5]	0:01:00	30'	70.0	65.6
10	Concrete Mixer Pour & Paving Activities[5]	0:01:00	30'	70.3	65.9
11	Concrete Mixer Backup Alarms & Air Brakes[5]	0:00:20	50'	71.6	71.6
12	Concrete Mixer Pour Activities[5]	1:00:00	50'	67.7	67.7
13	Forklift, Jackhammer, & Metal Truck Bed Loading[6]	0:02:06	50'	67.9	67.9

[1] As measured by Urban Crossroads, Inc. on 10/14/15 at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine.
[2] As measured by Urban Crossroads, Inc. on 10/20/15 at a construction site located in Rancho Mission Viejo.
[3] As measured by Urban Crossroads, Inc. on 10/20/15 at a residential construction site located in Rancho Mission Viejo.
[4] As measured by Urban Crossroads, Inc. on 10/30/15 during grading operations within an industrial construction site located in the City of Ontario.
[5] Reference noise level measurements were collected from a nighttime concrete pour at an industrial construction site, located at 27334 San Bernardino Avenue in the City of Redlands, between 1:00 a.m. to 2:00 a.m. on 7/1/15.
[6] As measured by Urban Crossroads, Inc. on 9/9/16 during the demolition of an existing paved parking lot at 41 Corporate Park in Irvine.
[7] Reference noise levels are calculated at 50 feet using a drop off rate of 6 dBA per doubling of distance (point source).

10.3 CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. Tables 10-2 to 10-7 present the short-term construction noise levels for each stage of construction. Table 10-8 provides a summary of the construction noise levels by stage at the nearby noise-sensitive receiver locations. Based on the stages of construction, the noise impacts associated with the proposed Project are expected to create temporarily high noise levels at the nearby receiver locations. To assess the worst-case construction noise levels, this analysis shows the highest noise impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity to each receiver location.

TABLE 10-2: DEMOLITION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Forklift, Jackhammer, & Metal Truck Bed Activities	67.9
Water Truck Pass-By & Backup Alarm	71.9
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	71.9

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	99'	-5.9	0.0	66.0
R2	646'	-22.2	0.0	49.7
R3	1,223'	-27.8	0.0	44.1
R4	1,192'	-27.5	0.0	44.4
R5	1,160'	-27.3	0.0	44.6
R6	1,234'	-27.8	0.0	44.1
R7	1,102'	-26.9	0.0	45.0

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers/berms in the Project study area.

TABLE 10-3: SITE PREPARATION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Dozer Pass-By	79.6
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	79.6

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	99’	-5.9	0.0	73.7
R2	646'	-22.2	0.0	57.4
R3	1,223'	-27.8	0.0	51.8
R4	1,192'	-27.5	0.0	52.1
R5	1,160'	-27.3	0.0	52.3
R6	1,234'	-27.8	0.0	51.8
R7	1,102'	-26.9	0.0	52.7

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers/berms in the Project study area.

TABLE 10-4: GRADING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Truck Pass-Bys & Dozer Activity	59.2
Dozer Activity	64.2
Rough Grading Activities	73.5
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	73.5

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	99’	-5.9	0.0	67.6
R2	646'	-22.2	0.0	51.3
R3	1,223'	-27.8	0.0	45.7
R4	1,192'	-27.5	0.0	46.0
R5	1,160'	-27.3	0.0	46.2
R6	1,234'	-27.8	0.0	45.7
R7	1,102'	-26.9	0.0	46.6

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers/berms in the Project study area.

TABLE 10-5: BUILDING CONSTRUCTION EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Construction Vehicle Maintenance Activities	67.5
Foundation Trenching	68.2
Framing	62.3
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	68.2

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	99’	-5.9	0.0	62.3
R2	646'	-22.2	0.0	46.0
R3	1,223'	-27.8	0.0	40.4
R4	1,192'	-27.5	0.0	40.7
R5	1,160'	-27.3	0.0	40.9
R6	1,234'	-27.8	0.0	40.4
R7	1,102'	-26.9	0.0	41.3

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers/berms in the Project study area.

TABLE 10-6: ARCHITECTURAL COATING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Construction Vehicle Maintenance Activities	67.5
Framing	62.3
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	67.5

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	99’	-5.9	0.0	61.6
R2	646'	-22.2	0.0	45.3
R3	1,223'	-27.8	0.0	39.7
R4	1,192'	-27.5	0.0	40.0
R5	1,160'	-27.3	0.0	40.2
R6	1,234'	-27.8	0.0	39.7
R7	1,102'	-26.9	0.0	40.6

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers/berms in the Project study area.

TABLE 10-7: PAVING EQUIPMENT NOISE LEVELS

Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})
Concrete Mixer Truck Movements	71.2
Concrete Paver Activities	65.6
Concrete Mixer Pour & Paving Activities	65.9
Concrete Mixer Backup Alarms & Air Brakes	71.6
Concrete Mixer Pour Activities	67.7
Highest Reference Noise Level at 50 Feet (dBA L_{eq}):	71.6

Receiver Location	Distance to Construction Activity (Feet)[2]	Distance Attenuation (dBA L_{eq})[3]	Estimated Noise Barrier Attenuation (dBA L_{eq})[4]	Construction Noise Level (dBA L_{eq})
R1	99’	-5.9	0.0	65.7
R2	646'	-22.2	0.0	49.4
R3	1,223'	-27.8	0.0	43.8
R4	1,192'	-27.5	0.0	44.1
R5	1,160'	-27.3	0.0	44.3
R6	1,234'	-27.8	0.0	43.8
R7	1,102'	-26.9	0.0	44.7

[1] Reference construction noise level measurements taken by Urban Crossroads, Inc.
[2] Distance from the nearest point of construction activity to the nearest receiver.
[3] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[4] Estimated barrier attenuation from existing barriers/berms in the Project study area.

10.4 CONSTRUCTION NOISE LEVEL COMPLIANCE

The construction noise analysis shows that the highest construction noise levels will occur when construction activities take place at the closest point from primary Project construction activity to each of the nearby receiver locations. As shown on Table 10-8, the construction noise levels are expected to range from 51.8 to 73.7 dBA L_{eq} at the nearby receiver locations.

TABLE 10-8: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Level (dBA L_{eq})						
	Demolition	Site Preparation	Grading	Building Construction	Architectural Coating	Paving	Highest Activity Noise Levels[2]
R1	66.0	73.7	67.6	62.3	61.6	65.7	73.7
R2	49.7	57.4	51.3	46.0	45.3	49.4	57.4
R3	44.1	51.8	45.7	40.4	39.7	43.8	51.8
R4	44.4	52.1	46.0	40.7	40.0	44.1	52.1
R5	44.6	52.3	46.2	40.9	40.2	44.3	52.3
R6	44.1	51.8	45.7	40.4	39.7	43.8	51.8
R7	45.0	52.7	46.6	41.3	40.6	44.7	52.7

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Estimated construction noise levels during peak operating conditions.

To evaluate whether the Project will generate potentially significant short-term noise levels at off-site sensitive receiver locations a construction-related the NIOSH noise level threshold of 85 dBA L_{eq} is used as acceptable thresholds for construction noise at the nearby sensitive receiver locations. Table 10-9 shows the highest construction noise levels at the potentially impacted receiver locations are estimated at 73.7 dBA L_{eq} and will satisfy the NIOSH 85 dBA L_{eq} significance threshold during temporary Project construction activities. The noise impact due to unmitigated Project construction noise levels is, therefore, considered a *less than significant* impact at all nearby sensitive receiver locations.

TABLE 10-9: CONSTRUCTION EQUIPMENT NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	73.7	85	No
R2	57.4	85	No
R3	51.8	85	No
R4	52.1	85	No
R5	52.3	85	No
R6	51.8	85	No
R7	52.7	85	No

[1] Noise receiver locations are shown on Exhibit 10-A.
[2] Estimated construction noise levels during peak operating conditions, as shown on Table 10-8.
[3] Construction noise thresholds as shown on Table 4-2.
[4] Do the estimated Project construction noise levels satisfy the construction noise level threshold?

10.5 CONSTRUCTION VIBRATION IMPACTS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from Project construction activities would cause only intermittent, localized intrusion. The proposed Project's construction activities most likely to cause vibration impacts are:

- Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to buildings, the vibration is usually short-term and is not of sufficient magnitude to cause building damage.
- Trucks: Trucks hauling building materials to construction sites can be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration. Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include grading. Using the vibration source level of construction equipment provided on Table 6-9 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 10-10 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 99 to 1,234 feet from Project construction activities, construction vibration velocity levels are estimated at 0.008 in/sec RMS and will remain below the County of Riverside threshold of 0.01 in/sec RMS at all receiver locations, as shown on Table 10-10. Therefore, the Project-related vibration impacts are considered *less than significant* during the construction activities at the Project site.

TABLE 10-10: PROJECT CONSTRUCTION VIBRATION LEVELS

Receiver[1]	Distance to Const. Activity (Feet)	Receiver PPV Levels (in/sec)[2]					RMS Velocity Levels (in/sec)[3]	Threshold	Threshold Exceeded?[4]
		Small Bulldozer	Jack-hammer	Loaded Trucks	Large Bulldozer	Peak Vibration			
R1	99'	0.0004	0.0044	0.0096	0.0113	0.0113	0.0080	0.01	No
R2	646'	0.0000	0.0003	0.0006	0.0007	0.0007	0.0005	0.01	No
R3	1,223'	0.0000	0.0001	0.0002	0.0003	0.0003	0.0002	0.01	No
R4	1,192'	0.0000	0.0001	0.0002	0.0003	0.0003	0.0002	0.01	No
R5	1,160'	0.0000	0.0001	0.0002	0.0003	0.0003	0.0002	0.01	No
R6	1,234'	0.0000	0.0001	0.0002	0.0003	0.0003	0.0002	0.01	No
R7	1,102'	0.0000	0.0001	0.0003	0.0003	0.0003	0.0002	0.01	No

[1] Receiver locations are shown on Exhibit 10-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 6-9.
[3] Vibration levels in PPV are converted to RMS velocity using a 0.71 conversion factor identified in the Caltrans Transportation and Construction Vibration Guidance Manual, September 2013.
[4] Does the vibration level exceed the maximum acceptable vibration threshold?

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11 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
2. **Urban Crossroads, Inc.** *Placentia Logistics Traffic Impact Analysis.* December 2019.
3. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment.* September 2018.
4. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
5. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
6. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
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9. **Occupational Safety and Health Administration.** *Standard 29 CRF, Part 1910.*
10. **Office of Planning and Research.** *State of California General Plan Guidelines.* October 2017.
11. **State of California.** *2016 California Green Building Standards Code.* January 2017.
12. **County of Riverside.** *General Plan Noise Element.* December 2015.
13. —. *Municipal Code, Chapter 9.52 Noise Regulation.*
14. **National Institute for Occupational Safety and Health.** *Criteria for Recommended Standard: Occupational Noise Exposure.* June 1998.
15. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment.* September 2018.
16. **California Court of Appeal.** *Gray v. County of Madera, F053661.* 167 Cal.App.4th 1099; - Cal.Rptr.3d, October 2008.
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18. **American National Standards Institute (ANSI).** *Specification for Sound Level Meters ANSI S1.4-2014/IEC 61672-1:2013.*
19. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
20. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
21. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.

22. **County of Riverside, Office of Industrial Hygiene.** *Requirements for Determining and Mitigating Traffic Noise Impacts to Residential Structures.* April 2015.

23. **Urban Crossroads, Inc.** *Placentia Logistics Air Quality Impact Analysis.* December 2019.

12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Placentia Logistics Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5979.

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EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February 2013

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APPENDIX 3.1:

COUNTY OF RIVERSIDE MUNICIPAL CODE

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9.52.010 - Intent.

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of Riverside County residents and degrade their quality of life. Pursuant to its police power, the board of supervisors declares that noise shall be regulated in the manner described in this chapter. This chapter is intended to establish county-wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are established.

(Ord. 847 § 1, 2006)

9.52.020 - Exemptions.

Sound emanating from the following sources is exempt from the provisions of this chapter:

A. Facilities owned or operated by or for a governmental agency;

B. Capital improvement projects of a governmental agency;

C. The maintenance or repair of public properties;

D. Public safety personnel in the course of executing their official duties, including, but not limited to, sworn peace officers, emergency personnel and public utility personnel. This exemption includes, without limitation, sound emanating from all equipment used by such personnel, whether stationary or mobile;

E. Public or private schools and school-sponsored activities;

F. Agricultural operations on land designated "Agriculture" in the Riverside County general plan, or land zoned A-l (light agriculture), A-P (light agriculture with poultry), A-2 (heavy agriculture), A-D (agriculture-dairy) or C/V (citrus/vineyard), provided such operations are carried out in a manner consistent with accepted industry standards. This exemption includes, without limitation, sound emanating from all equipment used during such operations, whether stationary or mobile;

G. Wind energy conversion systems (WECS), provided such systems comply with the WECS noise provisions of Riverside County Ordinance No. 348;

H. Private construction projects located one-quarter of a mile or more from an inhabited dwelling;

I. Private construction projects located within one-quarter of a mile from an inhabited dwelling, provided that:

1. Construction does not occur between the hours of six p.m. and six a.m. during the months of June through September, and

2. Construction does not occur between the hours of six p.m. and seven a.m. during the months of October through May;

J. Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., provided such maintenance occurs between the hours of seven a.m. and eight p.m.;

K. Motor vehicles, other than off-highway vehicles. This exemption does not include sound emanating from motor vehicle sound systems;

L. Heating and air conditioning equipment;

M. Safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare;

N. The discharge of firearms consistent with all state laws.

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APPENDIX 5.1:

STUDY AREA PHOTOS

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JN: 12729 Study Area Photos

L1_E
33, 49' 22.830000", 117, 14' 55.330000"

L1_N
33, 48' 51.910000", 117, 13' 33.020000"

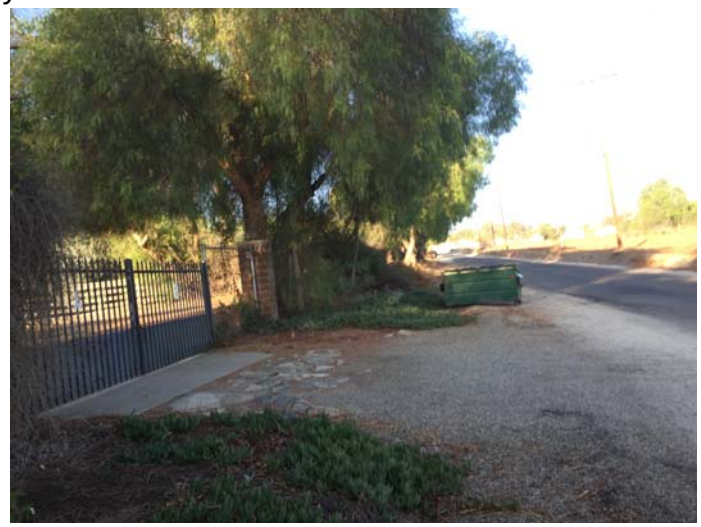
L1_S
33, 49' 22.830000", 117, 14' 55.330000"

L1_W
33, 49' 22.810000", 117, 14' 55.440000"

L2_E
33, 49' 22.850000", 117, 15' 3.210000"

L2_N
33, 49' 22.860000", 117, 15' 3.190000"

L2_S
33, 49' 22.850000", 117, 15' 3.210000"



L2_W
33, 49' 22.820000", 117, 15' 3.210000"

L3_E
33, 49' 26.100000", 117, 15' 9.640000"

L3_N
33, 49' 26.100000", 117, 15' 9.610000"

L3_S
33, 49' 26.100000", 117, 15' 9.640000"

L3_W
33, 49' 26.100000", 117, 15' 9.610000"

L4_E
33, 49' 35.580000", 117, 15' 9.780000"

L4_N
33, 49' 35.580000", 117, 15' 9.780000"

L4_S
33, 49' 35.580000", 117, 15' 9.780000"

L4_W
33, 49' 35.550000", 117, 15' 9.750000"

L5_E
33, 49' 40.480000", 117, 15' 10.900000"

L5_N
33, 49' 40.490000", 117, 15' 10.930000"

JN: 12729 Study Area Photos

L5_S
33, 49' 40.490000", 117, 15' 10.930000"

L5_W
33, 49' 40.490000", 117, 15' 10.880000"

APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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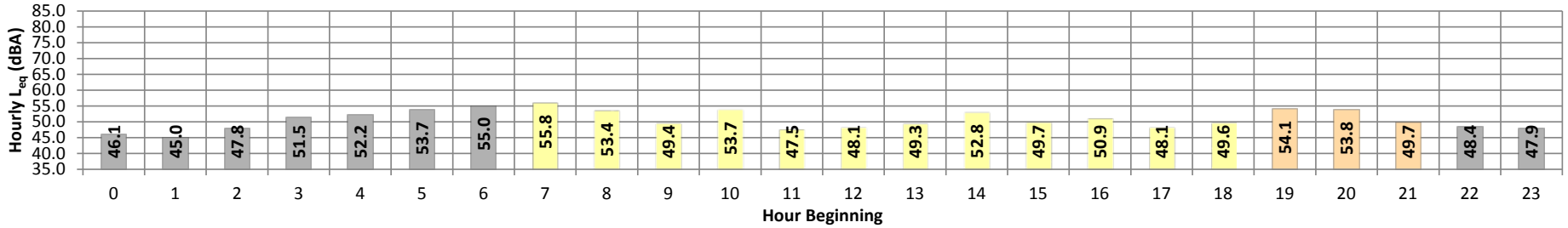
24-Hour Noise Level Measurement Summary

Date: Wednesday, October 16, 2019 *Location:* L1 - Located south of project site on Placentia Avenue in front of single-family home at 23745 Placentia Avenue. *Meter:* Piccolo II *JN:* 12729

Project: HARVILL & PLACENTIA WAREHOUSE *Analyst:* P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	*Hour*	*L_{eq}*	*L_{max}*	*L_{min}*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*	*L_{eq}*	*Adj.*	*Adj. L_{eq}*
Night	0	46.1	50.2	43.8	49.8	49.5	48.7	48.1	46.6	45.7	44.5	44.3	44.0	46.1	10.0	56.1
	1	45.0	48.0	43.0	47.7	47.5	46.9	46.5	45.5	44.7	43.6	43.3	43.1	45.0	10.0	55.0
	2	47.8	52.6	45.7	52.3	51.8	50.3	49.5	48.0	47.4	46.4	46.1	45.8	47.8	10.0	57.8
	3	51.5	56.6	49.4	56.2	55.7	54.2	53.2	51.6	51.0	49.9	49.7	49.5	51.5	10.0	61.5
	4	52.2	56.7	50.4	56.3	55.8	54.3	53.6	52.5	51.8	50.9	50.7	50.5	52.2	10.0	62.2
	5	53.7	60.0	51.9	59.5	58.7	56.4	54.8	53.6	53.1	52.4	52.2	52.0	53.7	10.0	63.7
	6	55.0	60.5	53.1	60.2	59.5	57.5	56.4	55.1	54.5	53.6	53.4	53.2	55.0	10.0	65.0
Day	7	55.8	63.2	53.5	62.7	61.7	59.1	57.7	55.6	54.8	53.9	53.8	53.6	55.8	0.0	55.8
	8	53.4	64.1	48.0	63.7	62.7	59.4	56.9	51.8	50.1	48.7	48.4	48.1	53.4	0.0	53.4
	9	49.4	59.3	42.7	58.7	57.7	55.0	53.1	49.2	46.9	43.8	43.3	42.8	49.4	0.0	49.4
	10	53.7	66.1	41.7	65.7	64.9	61.0	57.7	50.5	47.2	43.5	42.9	42.0	53.7	0.0	53.7
	11	47.5	57.2	40.0	56.7	55.8	53.0	51.4	47.6	44.6	41.5	41.0	40.2	47.5	0.0	47.5
	12	48.1	60.0	38.9	59.4	58.4	54.7	51.9	46.4	43.2	40.1	39.6	39.2	48.1	0.0	48.1
	13	49.3	62.0	39.8	61.3	60.1	56.0	53.2	46.5	43.4	40.8	40.4	40.0	49.3	0.0	49.3
	14	52.8	63.9	40.6	63.4	62.6	59.8	57.9	51.8	45.8	42.0	41.4	40.8	52.8	0.0	52.8
	15	49.7	62.0	40.2	61.2	60.2	56.4	53.7	47.8	44.0	41.1	40.8	40.4	49.7	0.0	49.7
	16	50.9	63.9	40.8	63.5	62.5	58.3	54.6	46.2	43.7	41.5	41.2	40.9	50.9	0.0	50.9
	17	48.1	60.9	39.7	60.1	58.8	54.6	51.3	45.5	43.4	40.7	40.3	39.8	48.1	0.0	48.1
	18	49.6	61.0	41.6	60.6	59.7	56.5	53.6	47.3	45.1	42.5	42.1	41.8	49.6	0.0	49.6
Evening	19	54.1	62.1	47.3	61.8	61.3	59.6	58.7	54.8	50.4	47.9	47.7	47.4	54.1	5.0	59.1
	20	53.8	62.1	47.3	61.7	61.2	59.5	58.9	53.9	50.1	48.0	47.7	47.4	53.8	5.0	58.8
	21	49.7	63.5	44.0	62.6	61.1	53.3	50.3	46.8	45.6	44.5	44.3	44.1	49.7	5.0	54.7
Night	22	48.4	57.1	44.4	56.8	56.2	53.7	51.6	47.7	46.4	45.0	44.8	44.5	48.4	10.0	58.4
	23	47.9	57.6	44.1	57.1	56.1	52.9	50.6	46.9	46.0	44.7	44.5	44.2	47.9	10.0	57.9

Timeframe	*Hour*	*L_{eq}*	*L_{max}*	*L_{min}*	*L1%*	*L2%*	*L5%*	*L8%*	*L25%*	*L50%*	*L90%*	*L95%*	*L99%*
Day	Min	47.5	57.2	38.9	56.7	55.8	53.0	51.3	45.5	43.2	40.1	39.6	39.2
	Max	55.8	66.1	53.5	65.7	64.9	61.0	57.9	55.6	54.8	53.9	53.8	53.6
Energy Average		51.5	Average:		61.4	60.4	57.0	54.4	48.8	46.0	43.3	42.9	42.5
Evening	Min	49.7	62.1	44.0	61.7	61.1	53.3	50.3	46.8	45.6	44.5	44.3	44.1
	Max	54.1	63.5	47.3	62.6	61.3	59.6	58.9	54.8	50.4	48.0	47.7	47.4
Energy Average		52.9	Average:		62.0	61.2	57.5	56.0	51.8	48.7	46.8	46.6	46.3
Night	Min	45.0	48.0	43.0	47.7	47.5	46.9	46.5	45.5	44.7	43.6	43.3	43.1
	Max	55.0	60.5	53.1	60.2	59.5	57.5	56.4	55.1	54.5	53.6	53.4	53.2
Energy Average		50.9	Average:		55.1	54.5	52.8	51.6	49.7	48.9	47.9	47.7	47.4

L_{eq} (dBA)

24-Hour	*Daytime*	*Nighttime*
51.5	**51.8**	**50.9**

24-Hour CNEL (dBA)

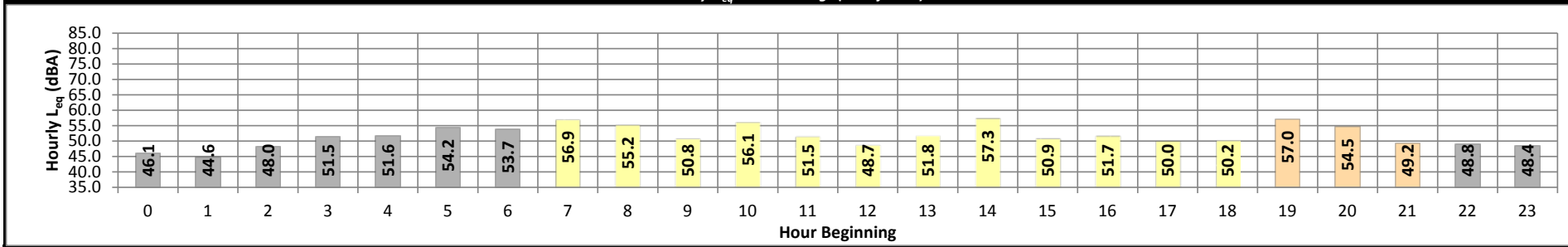
57.9

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 16, 2019 *Location:* L2 - Located southwest of project site on Placentia Avenue in front of home at 23551 Placentia Avenue. *Meter:* Piccolo II *JN:* 12729

Project: HARVILL & PLACENTIA WAREHOUSE *Analyst:* P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	46.1	49.0	44.2	48.8	48.6	48.1	47.8	46.5	45.7	44.7	44.5	44.3	46.1	10.0	56.1
	1	44.6	47.2	43.2	46.9	46.7	46.1	45.8	45.0	44.4	43.7	43.5	43.3	44.6	10.0	54.6
	2	48.0	54.9	45.8	54.6	54.1	51.7	49.9	47.7	47.1	46.3	46.1	45.9	48.0	10.0	58.0
	3	51.5	58.4	49.4	57.9	57.1	54.2	52.7	51.4	50.8	49.9	49.8	49.5	51.5	10.0	61.5
	4	51.6	58.2	49.8	57.3	56.4	54.2	53.3	51.6	51.0	50.2	50.0	49.9	51.6	10.0	61.6
	5	54.2	60.6	52.5	60.2	59.4	57.0	55.4	54.0	53.5	52.9	52.7	52.6	54.2	10.0	64.2
	6	53.7	61.4	51.6	60.9	60.0	57.2	55.1	53.3	52.7	52.0	51.9	51.7	53.7	10.0	63.7
Day	7	56.9	65.1	54.5	64.6	63.7	60.7	58.8	56.4	55.7	54.9	54.7	54.5	56.9	0.0	56.9
	8	55.2	66.1	49.8	65.6	64.6	61.4	59.0	53.6	51.5	50.3	50.1	49.9	55.2	0.0	55.2
	9	50.8	61.4	43.7	61.0	60.2	57.4	54.9	49.6	47.1	44.5	44.2	43.8	50.8	0.0	50.8
	10	56.1	68.8	40.6	68.6	67.8	64.5	60.6	49.9	45.8	41.8	41.4	40.8	56.1	0.0	56.1
	11	51.5	62.7	39.7	62.4	62.0	59.6	56.6	47.6	44.5	41.4	40.7	39.9	51.5	0.0	51.5
	12	48.7	61.1	38.3	60.7	59.7	56.0	52.6	45.7	42.3	39.1	38.8	38.4	48.7	0.0	48.7
	13	51.8	65.1	39.5	64.3	63.3	59.4	56.3	46.0	42.7	40.4	40.1	39.7	51.8	0.0	51.8
	14	57.3	69.4	41.8	68.7	67.9	64.8	62.4	54.4	49.7	44.2	43.0	42.1	57.3	0.0	57.3
	15	50.9	64.0	39.8	63.2	62.2	58.2	54.5	47.3	43.6	40.6	40.3	40.0	50.9	0.0	50.9
	16	51.7	65.0	40.1	64.6	63.6	59.5	55.6	45.3	42.7	40.8	40.5	40.2	51.7	0.0	51.7
	17	50.0	63.5	39.8	62.8	61.6	57.0	53.1	45.5	43.0	40.6	40.3	39.9	50.0	0.0	50.0
	18	50.2	62.4	40.9	61.8	61.0	57.7	54.3	46.8	43.7	41.7	41.4	41.0	50.2	0.0	50.2
Evening	19	57.0	65.6	46.6	65.4	64.9	63.6	62.6	57.7	50.7	47.2	47.0	46.7	57.0	5.0	62.0
	20	54.5	64.0	46.9	63.6	63.1	61.4	59.7	53.9	49.9	47.6	47.3	47.0	54.5	5.0	59.5
	21	49.2	61.6	43.5	61.0	59.9	55.4	51.5	46.0	45.1	44.0	43.8	43.6	49.2	5.0	54.2
Night	22	48.8	60.1	43.4	59.7	58.8	54.6	51.6	47.0	45.4	44.0	43.7	43.5	48.8	10.0	58.8
	23	48.4	59.5	43.9	59.0	58.1	54.2	50.9	46.6	45.6	44.4	44.2	44.0	48.4	10.0	58.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	48.7	61.1	38.3	60.7	59.7	56.0	52.6	45.3	42.3	39.1	38.8	38.4
	Max	57.3	69.4	54.5	68.7	67.9	64.8	62.4	56.4	55.7	54.9	54.7	54.5
Energy Average		53.6	Average:		64.0	63.1	59.7	56.6	49.0	46.0	43.4	43.0	42.5
Evening	Min	49.2	61.6	43.5	61.0	59.9	55.4	51.5	46.0	45.1	44.0	43.8	43.6
	Max	57.0	65.6	46.9	65.4	64.9	63.6	62.6	57.7	50.7	47.6	47.3	47.0
Energy Average		54.6	Average:		63.3	62.6	60.2	57.9	52.5	48.6	46.3	46.0	45.8
Night	Min	44.6	47.2	43.2	46.9	46.7	46.1	45.8	45.0	44.4	43.7	43.5	43.3
	Max	54.2	61.4	52.5	60.9	60.0	57.2	55.4	54.0	53.5	52.9	52.7	52.6
Energy Average		50.7	Average:		56.2	55.5	53.0	51.4	49.2	48.5	47.6	47.4	47.2

L_{eq} (dBA)

24-Hour	*Daytime*	*Nighttime*
52.9	**53.8**	**50.7**

24-Hour CNEL (dBA)

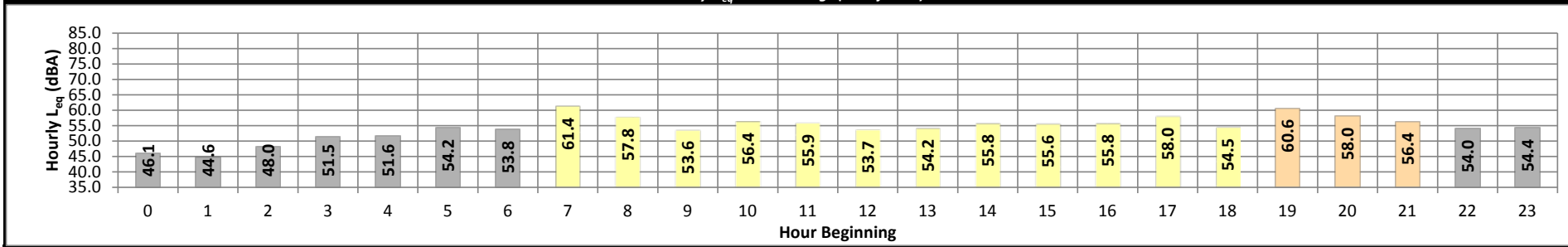
58.3

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 16, 2019 *Location:* L3 - Located west of project site on Patterson Avenue near existing vacant land and residential homes. *Meter:* Piccolo II *JN:* 12729

Project: HARVILL & PLACENTIA WAREHOUSE *Analyst:* P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	46.1	49.1	44.3	48.8	48.6	48.2	47.9	46.6	45.8	44.8	44.6	44.4	46.1	10.0	56.1
	1	44.6	47.2	43.2	46.9	46.7	46.1	45.8	45.0	44.4	43.7	43.5	43.3	44.6	10.0	54.6
	2	48.0	54.9	45.8	54.6	54.1	51.7	49.9	47.7	47.1	46.3	46.1	45.9	48.0	10.0	58.0
	3	51.5	58.4	49.4	57.9	57.1	54.2	52.7	51.4	50.8	49.9	49.8	49.5	51.5	10.0	61.5
	4	51.6	58.2	49.8	57.3	56.4	54.2	53.3	51.6	51.0	50.2	50.0	49.9	51.6	10.0	61.6
	5	54.2	60.6	52.5	60.2	59.4	57.0	55.4	54.0	53.5	52.9	52.7	52.6	54.2	10.0	64.2
	6	53.8	61.4	51.7	60.9	60.0	57.2	55.2	53.4	52.8	52.1	52.0	51.8	53.8	10.0	63.8
Day	7	61.4	73.2	57.2	72.4	70.7	66.5	63.6	59.4	58.6	57.7	57.5	57.3	61.4	0.0	61.4
	8	57.8	69.4	52.6	68.8	67.6	64.0	61.0	55.8	54.3	53.1	52.9	52.7	57.8	0.0	57.8
	9	53.6	66.7	43.8	65.9	64.6	60.2	56.9	51.3	48.1	44.8	44.4	44.0	53.6	0.0	53.6
	10	56.4	70.4	42.8	69.6	68.1	63.4	59.8	51.9	47.6	44.2	43.6	43.0	56.4	0.0	56.4
	11	55.9	71.2	40.7	70.2	68.4	61.8	57.7	49.4	46.0	41.9	41.5	40.9	55.9	0.0	55.9
	12	53.7	67.8	40.8	66.9	65.4	60.5	57.6	49.0	45.0	41.7	41.4	40.9	53.7	0.0	53.7
	13	54.2	69.4	40.8	68.4	66.6	60.6	55.7	46.7	44.2	41.7	41.3	40.9	54.2	0.0	54.2
	14	55.8	68.3	42.0	67.7	66.3	62.5	60.1	54.3	48.4	43.4	42.9	42.3	55.8	0.0	55.8
	15	55.6	69.1	41.3	68.5	67.3	62.8	59.2	51.2	47.0	42.3	41.8	41.4	55.6	0.0	55.6
	16	55.8	70.4	42.3	69.5	67.9	63.0	58.8	48.5	45.2	43.0	42.7	42.4	55.8	0.0	55.8
	17	58.0	72.5	44.5	71.7	70.1	65.3	61.2	50.2	47.2	45.1	44.9	44.6	58.0	0.0	58.0
	18	54.5	68.0	43.1	67.2	66.0	61.6	58.1	49.6	47.0	44.0	43.6	43.2	54.5	0.0	54.5
Evening	19	60.6	70.8	50.8	70.1	68.9	65.9	64.3	61.4	57.5	52.3	51.4	50.9	60.6	5.0	65.6
	20	58.0	69.8	51.1	69.2	67.8	63.6	60.8	57.0	54.1	51.9	51.6	51.3	58.0	5.0	63.0
	21	56.4	70.2	47.8	69.3	67.9	63.3	59.4	51.0	49.5	48.4	48.2	47.9	56.4	5.0	61.4
Night	22	54.0	67.5	46.8	66.6	64.8	59.7	56.3	50.8	49.2	47.6	47.3	46.9	54.0	10.0	64.0
	23	54.4	68.4	47.4	67.3	65.4	60.4	55.5	50.7	49.5	48.0	47.8	47.5	54.4	10.0	64.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	53.6	66.7	40.7	65.9	64.6	60.2	55.7	46.7	44.2	41.7	41.3	40.9
	Max	61.4	73.2	57.2	72.4	70.7	66.5	63.6	59.4	58.6	57.7	57.5	57.3
Energy Average		56.7	Average:		68.9	67.4	62.7	59.1	51.4	48.2	45.2	44.9	44.5
Evening	Min	56.4	69.8	47.8	69.2	67.8	63.3	59.4	51.0	49.5	48.4	48.2	47.9
	Max	60.6	70.8	51.1	70.1	68.9	65.9	64.3	61.4	57.5	52.3	51.6	51.3
Energy Average		58.7	Average:		69.5	68.2	64.3	61.5	56.5	53.7	50.9	50.4	50.0
Night	Min	44.6	47.2	43.2	46.9	46.7	46.1	45.8	45.0	44.4	43.7	43.5	43.3
	Max	54.4	68.4	52.5	67.3	65.4	60.4	56.3	54.0	53.5	52.9	52.7	52.6
Energy Average		52.1	Average:		57.8	57.0	54.3	52.4	50.1	49.3	48.4	48.2	48.0

L_{eq} (dBA)		
24-Hour	*Daytime*	*Nighttime*
55.9	**57.2**	**52.1**

24-Hour CNEL (dBA)

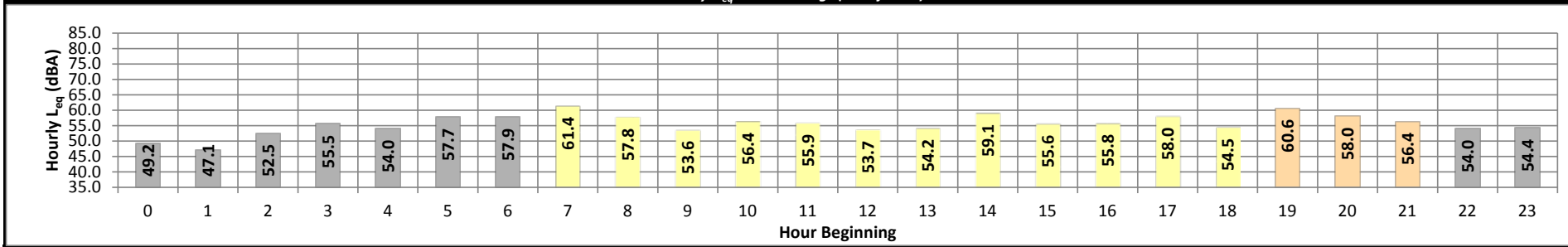
60.5

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 16, 2019 *Location:* L4 - Located southeast of intersection of Walnut Street and Patterson Avenue near existing vacant land. *Meter:* Piccolo II *JN:* 12729

Project: HARVILL & PLACENTIA WAREHOUSE *Analyst:* P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	49.2	52.6	47.0	52.2	51.8	51.2	50.8	49.8	48.9	47.7	47.4	47.1	49.2	10.0	59.2
	1	47.1	49.6	45.3	49.4	49.2	48.7	48.4	47.6	46.9	45.9	45.7	45.4	47.1	10.0	57.1
	2	52.5	64.9	47.8	63.9	62.3	57.4	54.2	50.5	49.6	48.4	48.2	47.9	52.5	10.0	62.5
	3	55.5	67.7	51.8	66.5	64.9	59.1	56.1	53.9	53.2	52.3	52.1	51.9	55.5	10.0	65.5
	4	54.0	57.4	52.6	57.2	56.7	55.6	55.1	54.3	53.8	53.0	52.9	52.7	54.0	10.0	64.0
	5	57.7	66.1	55.5	65.4	64.3	61.1	59.2	57.1	56.6	56.0	55.8	55.6	57.7	10.0	67.7
	6	57.9	68.2	54.9	67.4	66.0	61.9	59.4	56.9	56.2	55.3	55.2	55.0	57.9	10.0	67.9
Day	7	61.4	73.2	57.2	72.4	70.7	66.5	63.6	59.4	58.6	57.7	57.5	57.3	61.4	0.0	61.4
	8	57.8	69.4	52.6	68.8	67.6	64.0	61.0	55.8	54.3	53.1	52.9	52.7	57.8	0.0	57.8
	9	53.6	66.7	43.8	65.9	64.6	60.2	56.9	51.3	48.1	44.8	44.4	44.0	53.6	0.0	53.6
	10	56.4	70.4	42.8	69.6	68.1	63.4	59.8	51.9	47.6	44.2	43.6	43.0	56.4	0.0	56.4
	11	55.9	71.2	40.7	70.2	68.4	61.8	57.7	49.4	46.0	41.9	41.5	40.9	55.9	0.0	55.9
	12	53.7	67.8	40.8	66.9	65.4	60.5	57.6	49.0	45.0	41.7	41.4	40.9	53.7	0.0	53.7
	13	54.2	69.4	40.8	68.4	66.6	60.6	55.7	46.7	44.2	41.7	41.3	40.9	54.2	0.0	54.2
	14	59.1	72.5	42.2	71.7	70.1	65.7	63.1	56.3	51.3	44.5	43.4	42.6	59.1	0.0	59.1
	15	55.6	69.1	41.3	68.5	67.3	62.8	59.2	51.2	47.0	42.3	41.8	41.4	55.6	0.0	55.6
	16	55.8	70.4	42.3	69.5	67.9	63.0	58.8	48.5	45.2	43.0	42.7	42.4	55.8	0.0	55.8
	17	58.0	72.5	44.5	71.7	70.1	65.3	61.2	50.2	47.2	45.1	44.9	44.6	58.0	0.0	58.0
	18	54.5	68.0	43.1	67.2	66.0	61.6	58.1	49.6	47.0	44.0	43.6	43.2	54.5	0.0	54.5
Evening	19	60.6	70.8	50.8	70.1	68.9	65.9	64.3	61.4	57.5	52.3	51.4	50.9	60.6	5.0	65.6
	20	58.0	69.8	51.1	69.2	67.8	63.6	60.8	57.0	54.1	51.9	51.6	51.3	58.0	5.0	63.0
	21	56.4	70.2	47.8	69.3	67.9	63.3	59.4	51.0	49.5	48.4	48.2	47.9	56.4	5.0	61.4
Night	22	54.0	67.5	46.8	66.6	64.8	59.7	56.3	50.8	49.2	47.6	47.3	46.9	54.0	10.0	64.0
	23	54.4	68.4	47.4	67.3	65.4	60.4	55.5	50.7	49.5	48.0	47.8	47.5	54.4	10.0	64.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	53.6	66.7	40.7	65.9	64.6	60.2	55.7	46.7	44.2	41.7	41.3	40.9
	Max	61.4	73.2	57.2	72.4	70.7	66.5	63.6	59.4	58.6	57.7	57.5	57.3
Energy Average		57.0	Average:		69.2	67.7	62.9	59.4	51.6	48.5	45.3	44.9	44.5
Evening	Min	56.4	69.8	47.8	69.2	67.8	63.3	59.4	51.0	49.5	48.4	48.2	47.9
	Max	60.6	70.8	51.1	70.1	68.9	65.9	64.3	61.4	57.5	52.3	51.6	51.3
Energy Average		58.7	Average:		69.5	68.2	64.3	61.5	56.5	53.7	50.9	50.4	50.0
Night	Min	47.1	49.6	45.3	49.4	49.2	48.7	48.4	47.6	46.9	45.9	45.7	45.4
	Max	57.9	68.4	55.5	67.4	66.0	61.9	59.4	57.1	56.6	56.0	55.8	55.6
Energy Average		54.7	Average:		61.8	60.6	57.2	55.0	52.4	51.5	50.5	50.3	50.0

L_{eq} (dBA)		
24-Hour	Daytime	Nighttime
56.6	57.4	54.7

24-Hour CNEL (dBA)

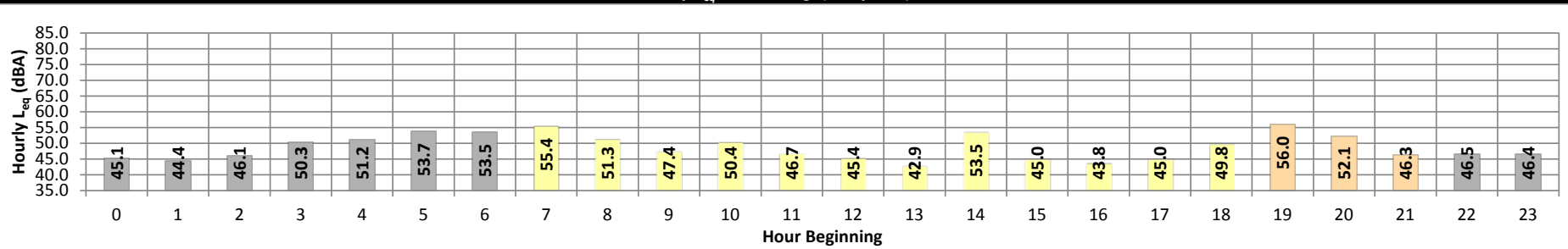
62.2

24-Hour Noise Level Measurement Summary

Date: Wednesday, October 16, 2019 *Location:* L5 - Located in vacant dirt lot west of Patterson avenue across the U-Turn for Christ building. *Meter:* Piccolo II *JN:* 12729

Project: HARVILL & PLACENTIA WAREHOUSE *Analyst:* P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	45.1	47.5	43.3	47.2	47.0	46.6	46.3	45.5	44.9	43.9	43.7	43.4	45.1	10.0	55.1
	1	44.4	47.1	42.7	46.8	46.6	46.1	45.8	44.8	44.2	43.2	43.1	42.8	44.4	10.0	54.4
	2	46.1	49.6	44.4	49.5	49.2	48.3	47.7	46.4	45.7	44.9	44.7	44.4	46.1	10.0	56.1
	3	50.3	53.5	48.7	53.3	53.0	52.1	51.5	50.6	50.0	49.2	49.0	48.8	50.3	10.0	60.3
	4	51.2	53.4	49.7	53.2	53.0	52.6	52.3	51.5	51.0	50.2	50.0	49.8	51.2	10.0	61.2
	5	53.7	55.9	52.5	55.7	55.6	55.0	54.6	54.0	53.6	52.9	52.8	52.6	53.7	10.0	63.7
	6	53.5	56.1	52.0	55.9	55.7	55.1	54.7	53.8	53.2	52.5	52.3	52.1	53.5	10.0	63.5
Day	7	55.4	59.6	53.7	59.4	59.1	57.9	57.1	55.5	54.9	54.1	54.0	53.8	55.4	0.0	55.4
	8	51.3	55.2	49.0	55.0	54.7	53.9	53.4	51.9	50.6	49.5	49.3	49.1	51.3	0.0	51.3
	9	47.4	53.5	41.9	53.1	52.7	51.5	50.7	48.4	46.2	42.9	42.6	42.1	47.4	0.0	47.4
	10	50.4	60.0	39.2	59.5	59.1	57.7	56.3	48.6	45.0	41.2	40.3	39.5	50.4	0.0	50.4
	11	46.7	56.9	38.6	56.5	55.5	52.4	50.8	46.4	43.4	40.4	39.8	38.9	46.7	0.0	46.7
	12	45.4	55.9	36.9	55.5	54.7	52.3	50.2	43.9	41.2	37.9	37.6	37.1	45.4	0.0	45.4
	13	42.9	51.3	37.4	50.9	50.4	48.6	46.9	42.8	40.7	38.2	37.8	37.5	42.9	0.0	42.9
	14	53.5	63.4	41.7	62.8	62.1	60.5	58.9	52.9	48.8	43.7	42.6	41.8	53.5	0.0	53.5
	15	45.0	51.8	39.2	51.3	50.9	49.7	48.7	46.1	43.3	40.0	39.7	39.4	45.0	0.0	45.0
	16	43.8	52.0	39.2	51.4	50.9	49.0	47.2	43.8	41.9	39.8	39.6	39.3	43.8	0.0	43.8
	17	45.0	52.3	40.2	51.9	51.4	49.7	48.4	45.5	43.3	40.9	40.7	40.3	45.0	0.0	45.0
	18	49.8	57.7	40.7	57.4	57.0	56.0	55.6	48.8	44.3	41.5	41.2	40.8	49.8	0.0	49.8
Evening	19	56.0	61.1	46.6	60.8	60.6	60.0	59.6	57.9	54.9	48.2	47.3	46.9	56.0	5.0	61.0
	20	52.1	58.8	47.3	58.4	57.9	56.5	55.7	53.3	50.0	47.9	47.7	47.4	52.1	5.0	57.1
	21	46.3	50.4	44.2	50.2	49.9	49.1	48.4	46.7	45.8	44.7	44.6	44.3	46.3	5.0	51.3
Night	22	46.5	51.4	44.1	51.2	50.9	49.6	48.8	46.9	45.8	44.7	44.4	44.2	46.5	10.0	56.5
	23	46.4	51.6	43.9	51.3	50.9	49.4	48.4	46.6	45.7	44.5	44.2	44.0	46.4	10.0	56.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	42.9	51.3	36.9	50.9	50.4	48.6	46.9	42.8	40.7	37.9	37.6	37.1
	Max	55.4	63.4	53.7	62.8	62.1	60.5	58.9	55.5	54.9	54.1	54.0	53.8
Energy Average		49.8	Average:		55.4	54.9	53.3	52.0	47.9	45.3	42.5	42.1	41.6
Evening	Min	46.3	50.4	44.2	50.2	49.9	49.1	48.4	46.7	45.8	44.7	44.6	44.3
	Max	56.0	61.1	47.3	60.8	60.6	60.0	59.6	57.9	54.9	48.2	47.7	47.4
Energy Average		53.0	Average:		56.5	56.1	55.2	54.6	52.6	50.2	47.0	46.5	46.2
Night	Min	44.4	47.1	42.7	46.8	46.6	46.1	45.8	44.8	44.2	43.2	43.1	42.8
	Max	53.7	56.1	52.5	55.9	55.7	55.1	54.7	54.0	53.6	52.9	52.8	52.6
Energy Average		49.9	Average:		51.6	51.3	50.5	50.0	48.9	48.2	47.3	47.1	46.9

L_{eq} (dBA)

24-Hour	*Daytime*	*Nighttime*
50.4	**50.7**	**49.9**

24-Hour CNEL (dBA)

57.0

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APPENDIX 7.1:

OFF-SITE TRAFFIC NOISE CONTOURS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing (2019) | Project Name: Placentia Logistics
Road Name: Harvill Av. | Job Number: 12729
Road Segment: n/o Dwy. 3

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,760 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	925 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.72	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.51	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.29	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.7	65.7	64.4	58.4	66.8	67.4
Medium Trucks:	57.7	55.8	48.3	57.1	63.2	63.3
Heavy Trucks:	59.3	57.3	53.9	58.5	64.7	64.8
Vehicle Noise:	67.1	66.6	64.8	62.8	69.9	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	58	126	271	584
CNEL:	62	133	286	616

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing (2019) | Project Name: Placentia Logistics
Road Name: Harvill Av. | Job Number: 12729
Road Segment: n/o Placentia St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,968 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	938 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.66	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.44	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.23	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.7	65.7	64.4	58.4	66.8	67.5
Medium Trucks:	57.8	55.9	48.4	57.1	63.3	63.3
Heavy Trucks:	59.3	57.3	53.9	58.6	64.8	64.9
Vehicle Noise:	67.2	66.7	64.9	62.9	70.0	70.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	59	127	273	589
CNEL:	62	134	288	621

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing (2019) | Project Name: Placentia Logistics
Road Name: Harvill Av. | Job Number: 12729
Road Segment: s/o Placentia St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,349 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	586 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.70	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-23.49	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.28	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.7	63.7	62.4	56.4	64.8	65.4
Medium Trucks:	55.7	53.8	46.3	55.1	61.3	61.3
Heavy Trucks:	57.3	55.3	51.9	56.5	62.7	62.8
Vehicle Noise:	65.1	64.7	62.9	60.8	67.9	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	93	200	430
CNEL:	45	98	211	454

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing (2019) | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: w/o Dwy. 2

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	399 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	25 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-17.44	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-36.22	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-39.01	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.2	48.2	46.9	40.9	49.3	49.9
Medium Trucks:	40.6	38.8	31.3	40.0	46.2	46.2
Heavy Trucks:	43.1	41.1	37.7	42.4	48.6	48.6
Vehicle Noise:	49.9	49.4	47.5	46.0	53.0	53.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	17	37
CNEL:	4	8	18	38

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing (2019) | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	399 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	25 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-17.44	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-36.22	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-39.01	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.2	48.2	46.9	40.9	49.3	49.9
Medium Trucks:	40.6	38.8	31.3	40.0	46.2	46.2
Heavy Trucks:	43.1	41.1	37.7	42.4	48.6	48.6
Vehicle Noise:	49.9	49.4	47.5	46.0	53.0	53.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	17	37
CNEL:	4	8	18	38

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing (2019) | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: e/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,572 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	600 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.60	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-23.39	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.17	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.4	63.4	62.1	56.1	64.5	65.2
Medium Trucks:	55.4	53.6	46.1	54.8	61.0	61.0
Heavy Trucks:	57.0	55.0	51.6	56.3	62.5	62.6
Vehicle Noise:	64.8	64.4	62.6	60.6	67.7	68.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	45	97	208	448
CNEL:	47	102	219	473

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Placentia Logistics
Road Name: Harvill Av. | Job Number: 12729
Road Segment: n/o Dwy. 3

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	14,852 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	931 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.93%
Medium Trucks:	48.9%	2.2%	48.9%	1.31%
Heavy Trucks:	47.3%	5.4%	47.3%	0.76%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.70	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.44	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.80	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.7	65.7	64.4	58.4	66.8	67.4
Medium Trucks:	57.8	55.9	48.4	57.1	63.3	63.4
Heavy Trucks:	59.8	57.8	54.4	59.0	65.2	65.3
Vehicle Noise:	67.2	66.7	64.9	63.0	70.1	70.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	129	278	600
CNEL:	63	136	293	632

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Placentia Logistics
Road Name: Harvill Av. | Job Number: 12729
Road Segment: n/o Placentia St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	15,104 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	947 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.64%
Medium Trucks:	48.9%	2.2%	48.9%	1.38%
Heavy Trucks:	47.3%	5.4%	47.3%	0.98%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-2.64	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.14	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.62	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.7	65.8	64.5	58.4	66.9	67.5
Medium Trucks:	58.1	56.2	48.7	57.4	63.6	63.6
Heavy Trucks:	61.0	58.9	55.5	60.2	66.4	66.5
Vehicle Noise:	67.5	67.0	65.1	63.6	70.6	70.9

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	65	140	301	648
CNEL:	68	147	316	680

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Placentia Logistics
Road Name: Harvill Av. | Job Number: 12729
Road Segment: s/o Placentia St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,406 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	590 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.03%
Medium Trucks:	48.9%	2.2%	48.9%	1.29%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.67	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-23.49	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-26.28	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.7	63.7	62.4	56.4	64.8	65.5
Medium Trucks:	55.7	53.8	46.3	55.1	61.3	61.3
Heavy Trucks:	57.3	55.3	51.9	56.5	62.7	62.8
Vehicle Noise:	65.1	64.7	62.9	60.8	68.0	68.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	43	93	200	431
CNEL:	46	98	211	455

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: w/o Dwy. 2

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	751 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	47 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	84.03%
Medium Trucks:	48.9%	2.2%	48.9%	4.15%
Heavy Trucks:	47.3%	5.4%	47.3%	11.82%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.36	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-28.42	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.87	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.3	50.3	49.0	43.0	51.4	52.0
Medium Trucks:	48.4	46.6	39.1	47.8	54.0	54.0
Heavy Trucks:	58.3	56.2	52.8	57.5	63.7	63.8
Vehicle Noise:	59.3	57.6	54.5	58.1	64.4	64.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	45	98	210
CNEL:	21	46	99	214

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	872 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	55 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	86.26%
Medium Trucks:	48.9%	2.2%	48.9%	3.57%
Heavy Trucks:	47.3%	5.4%	47.3%	10.17%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-14.59	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-28.42	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.87	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.0	51.1	49.7	43.7	52.1	52.8
Medium Trucks:	48.4	46.6	39.1	47.8	54.0	54.0
Heavy Trucks:	58.3	56.2	52.8	57.5	63.7	63.8
Vehicle Noise:	59.4	57.7	54.7	58.1	64.4	64.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	46	98	212
CNEL:	22	46	100	216

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: E+P | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: e/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	9,955 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	624 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	96.74%
Medium Trucks:	48.9%	2.2%	48.9%	1.56%
Heavy Trucks:	47.3%	5.4%	47.3%	1.70%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-4.49	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-22.42	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.04	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	63.5	63.5	62.2	56.2	64.6	65.3
Medium Trucks:	56.4	54.5	47.0	55.8	62.0	62.0
Heavy Trucks:	61.2	59.2	55.8	60.4	66.6	66.7
Vehicle Noise:	66.0	65.3	63.2	62.8	69.6	69.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	60	129	278	599
CNEL:	62	134	290	624

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Harvill Av.
Road Segment: n/o Dwy. 3
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,175 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,390 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.95	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.74	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.53	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	67.5	66.1	60.1	68.5	69.2
Medium Trucks:	59.5	57.6	50.1	58.8	65.0	65.1
Heavy Trucks:	61.1	59.0	55.6	60.3	66.5	66.6
Vehicle Noise:	68.9	68.4	66.6	64.6	71.7	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	165	355	766
CNEL:	81	174	375	808

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Harvill Av.
Road Segment: n/o Placentia St.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,175 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,390 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.95	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.74	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.53	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	67.5	66.1	60.1	68.5	69.2
Medium Trucks:	59.5	57.6	50.1	58.8	65.0	65.1
Heavy Trucks:	61.1	59.0	55.6	60.3	66.5	66.6
Vehicle Noise:	68.9	68.4	66.6	64.6	71.7	72.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	165	355	766
CNEL:	81	174	375	808

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Harvill Av.
Road Segment: s/o Placentia St.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,688 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	858 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.05	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.83	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.62	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.3	65.4	64.0	58.0	66.5	67.1
Medium Trucks:	57.4	55.5	48.0	56.7	62.9	63.0
Heavy Trucks:	59.0	56.9	53.5	58.2	64.4	64.5
Vehicle Noise:	66.8	66.3	64.5	62.5	69.6	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	55	120	258	555
CNEL:	59	126	272	586

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Placentia St.
Road Segment: w/o Dwy. 2
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	415 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	26 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-17.26	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-36.05	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-38.83	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.4	48.4	47.1	41.1	49.5	50.1
Medium Trucks:	40.8	38.9	31.4	40.2	46.4	46.4
Heavy Trucks:	43.3	41.3	37.9	42.5	48.7	48.8
Vehicle Noise:	50.1	49.6	47.7	46.1	53.2	53.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	17	38
CNEL:	4	9	18	40

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Placentia St.
Road Segment: w/o Harvill Av.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	415 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	26 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-17.26	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-36.05	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-38.83	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.4	48.4	47.1	41.1	49.5	50.1
Medium Trucks:	40.8	38.9	31.4	40.2	46.4	46.4
Heavy Trucks:	43.3	41.3	37.9	42.5	48.7	48.8
Vehicle Noise:	50.1	49.6	47.7	46.1	53.2	53.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	8	17	38
CNEL:	4	9	18	40

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EA
Road Name: Placentia St.
Road Segment: e/o Harvill Av.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,359 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,339 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.11	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-19.90	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.69	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.9	66.9	65.6	59.6	68.0	68.6
Medium Trucks:	58.9	57.1	49.6	58.3	64.5	64.5
Heavy Trucks:	60.5	58.5	55.1	59.8	66.0	66.0
Vehicle Noise:	68.3	67.9	66.1	64.0	71.2	71.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	77	165	355	765
CNEL:	81	174	375	807

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Harvill Av.
Road Segment: n/o Dwy. 3
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,266 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,396 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.96%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.73%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.94	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.69	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.19	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	67.5	66.2	60.1	68.6	69.2
Medium Trucks:	59.5	57.6	50.1	58.9	65.1	65.1
Heavy Trucks:	61.4	59.4	56.0	60.6	66.8	66.9
Vehicle Noise:	68.9	68.5	66.6	64.7	71.8	72.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	78	168	362	780
CNEL:	82	177	381	822

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Harvill Av.
Road Segment: n/o Placentia St.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,311 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,399 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.76%
Medium Trucks:	48.9%	2.2%	48.9%	1.35%
Heavy Trucks:	47.3%	5.4%	47.3%	0.88%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.94	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-19.53	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.37	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.4	67.5	66.2	60.1	68.6	69.2
Medium Trucks:	59.7	57.8	50.3	59.0	65.2	65.3
Heavy Trucks:	62.2	60.2	56.8	61.4	67.6	67.7
Vehicle Noise:	69.1	68.6	66.7	65.1	72.1	72.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	82	176	379	818
CNEL:	86	185	399	860

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Harvill Av.
Road Segment: s/o Placentia St.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	13,745 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	862 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.03%
Medium Trucks:	48.9%	2.2%	48.9%	1.29%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-3.03	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-21.83	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-24.62	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	65.4	65.4	64.1	58.1	66.5	67.1
Medium Trucks:	57.4	55.5	48.0	56.7	62.9	63.0
Heavy Trucks:	59.0	56.9	53.5	58.2	64.4	64.5
Vehicle Noise:	66.8	66.3	64.5	62.5	69.6	70.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	56	120	258	556
CNEL:	59	126	272	586

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Placentia St.
Road Segment: w/o Dwy. 2
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	767 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	48 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	84.33%
Medium Trucks:	48.9%	2.2%	48.9%	4.09%
Heavy Trucks:	47.3%	5.4%	47.3%	11.58%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.24	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-28.39	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.87	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.4	50.4	49.1	43.1	51.5	52.1
Medium Trucks:	48.5	46.6	39.1	47.8	54.0	54.1
Heavy Trucks:	58.3	56.2	52.8	57.5	63.7	63.8
Vehicle Noise:	59.3	57.6	54.5	58.1	64.4	64.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	45	98	211
CNEL:	21	46	100	215

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Placentia St.
Road Segment: w/o Harvill Av.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	889 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	56 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	86.48%
Medium Trucks:	48.9%	2.2%	48.9%	3.53%
Heavy Trucks:	47.3%	5.4%	47.3%	9.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-14.49	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-28.39	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.87	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.1	51.1	49.8	43.8	52.2	52.9
Medium Trucks:	48.5	46.6	39.1	47.8	54.0	54.1
Heavy Trucks:	58.3	56.2	52.8	57.5	63.7	63.8
Vehicle Noise:	59.4	57.8	54.7	58.1	64.4	64.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	46	98	212
CNEL:	22	47	100	216

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAP
Road Name: Placentia St.
Road Segment: e/o Harvill Av.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	21,742 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,363 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.44%
Medium Trucks:	48.9%	2.2%	48.9%	1.42%
Heavy Trucks:	47.3%	5.4%	47.3%	1.15%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.06	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-19.44	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.35	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.0	67.0	65.7	59.7	68.1	68.7
Medium Trucks:	59.4	57.5	50.0	58.8	64.9	65.0
Heavy Trucks:	62.9	60.8	57.4	62.1	68.3	68.4
Vehicle Noise:	68.9	68.3	66.4	65.2	72.1	72.4

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	191	411	886
CNEL:	93	200	431	928

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Harvill Av.
Road Segment: n/o Dwy. 3
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,342 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,714 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.04	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.83	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.62	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	68.4	67.0	61.0	69.5	70.1
Medium Trucks:	60.4	58.5	51.0	59.8	65.9	66.0
Heavy Trucks:	62.0	59.9	56.5	61.2	67.4	67.5
Vehicle Noise:	69.8	69.3	67.5	65.5	72.6	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	190	409	880
CNEL:	93	200	431	929

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Harvill Av.
Road Segment: n/o Placentia St.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,342 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,714 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.04	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.83	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.62	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	68.4	67.0	61.0	69.5	70.1
Medium Trucks:	60.4	58.5	51.0	59.8	65.9	66.0
Heavy Trucks:	62.0	59.9	56.5	61.2	67.4	67.5
Vehicle Noise:	69.8	69.3	67.5	65.5	72.6	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	190	409	880
CNEL:	93	200	431	929

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Harvill Av.
Road Segment: s/o Placentia St.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,618 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,105 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.95	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.74	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.52	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	66.5	65.1	59.1	67.5	68.2
Medium Trucks:	58.5	56.6	49.1	57.8	64.0	64.1
Heavy Trucks:	60.1	58.0	54.6	59.3	65.5	65.6
Vehicle Noise:	67.9	67.4	65.6	63.6	70.7	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	141	305	657
CNEL:	69	149	322	693

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Placentia St.
Road Segment: w/o Dwy. 2
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	453 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	28 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-16.88	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-35.67	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-38.46	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	48.7	48.8	47.4	41.4	49.9	50.5
Medium Trucks:	41.2	39.3	31.8	40.6	46.7	46.8
Heavy Trucks:	43.7	41.7	38.3	42.9	49.1	49.2
Vehicle Noise:	50.5	49.9	48.0	46.5	53.5	53.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	4	9	19	40
CNEL:	4	9	19	42

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Placentia St.
Road Segment: w/o Harvill Av.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,141 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	134 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-10.13	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-28.92	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-31.71	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	55.5	55.5	54.2	48.2	56.6	57.2
Medium Trucks:	47.9	46.1	38.6	47.3	53.5	53.5
Heavy Trucks:	50.4	48.4	45.0	49.7	55.9	55.9
Vehicle Noise:	57.2	56.7	54.8	53.3	60.3	60.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	11	24	52	112
CNEL:	12	25	55	118

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EAC
Road Name: Placentia St.
Road Segment: e/o Harvill Av.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,370 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,403 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.91	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-19.70	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.49	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.1	67.1	65.8	59.8	68.2	68.8
Medium Trucks:	59.1	57.3	49.8	58.5	64.7	64.7
Heavy Trucks:	60.7	58.7	55.3	60.0	66.2	66.2
Vehicle Noise:	68.5	68.1	66.3	64.2	71.4	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	170	366	789
CNEL:	83	179	387	833

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP
Road Name: Harvill Av.
Road Segment: n/o Dwy. 3
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,433 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,720 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.97%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.72%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.03	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.79	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.34	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	68.4	67.1	61.1	69.5	70.1
Medium Trucks:	60.4	58.5	51.0	59.8	66.0	66.0
Heavy Trucks:	62.2	60.2	56.8	61.5	67.7	67.8
Vehicle Noise:	69.8	69.4	67.6	65.6	72.7	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	89	192	415	893
CNEL:	94	203	437	942

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP
Road Name: Harvill Av.
Road Segment: n/o Placentia St.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,478 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,723 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.81%
Medium Trucks:	48.9%	2.2%	48.9%	1.34%
Heavy Trucks:	47.3%	5.4%	47.3%	0.85%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.03	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.66	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.66	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	68.4	67.1	61.1	69.5	70.1
Medium Trucks:	60.5	58.7	51.2	59.9	66.1	66.1
Heavy Trucks:	62.9	60.9	57.5	62.2	68.4	68.4
Vehicle Noise:	70.0	69.5	67.6	65.9	73.0	73.3

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	93	200	431	929
CNEL:	98	211	454	977

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP | Project Name: Placentia Logistics
Road Name: Harvill Av. | Job Number: 12729
Road Segment: s/o Placentia St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,675 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,108 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.03%
Medium Trucks:	48.9%	2.2%	48.9%	1.29%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.94	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.74	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.52	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	66.5	65.2	59.1	67.6	68.2
Medium Trucks:	58.5	56.6	49.1	57.8	64.0	64.1
Heavy Trucks:	60.1	58.0	54.6	59.3	65.5	65.6
Vehicle Noise:	67.9	67.4	65.6	63.6	70.7	71.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	142	305	657
CNEL:	69	149	322	694

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: w/o Dwy. 2

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	805 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	50 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	84.97%
Medium Trucks:	48.9%	2.2%	48.9%	3.96%
Heavy Trucks:	47.3%	5.4%	47.3%	11.07%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-15.00	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-28.32	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.86	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	50.6	50.6	49.3	43.3	51.7	52.4
Medium Trucks:	48.5	46.7	39.2	47.9	54.1	54.1
Heavy Trucks:	58.3	56.3	52.9	57.5	63.7	63.8
Vehicle Noise:	59.3	57.7	54.6	58.1	64.4	64.5

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	21	46	98	212
CNEL:	22	46	100	216

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	2,615 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	164 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	94.10%
Medium Trucks:	48.9%	2.2%	48.9%	2.06%
Heavy Trucks:	47.3%	5.4%	47.3%	3.85%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-9.44	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-26.05	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-23.33	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	56.2	56.2	54.9	48.9	57.3	57.9
Medium Trucks:	50.8	48.9	41.4	50.2	56.4	56.4
Heavy Trucks:	58.8	56.8	53.4	58.0	64.2	64.3
Vehicle Noise:	61.1	59.9	57.3	59.1	65.6	65.8

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	25	55	118	254
CNEL:	26	56	121	261

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: EACP | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: e/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,753 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,427 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.46%
Medium Trucks:	48.9%	2.2%	48.9%	1.41%
Heavy Trucks:	47.3%	5.4%	47.3%	1.13%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.86	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-19.26	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-20.23	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.2	67.2	65.9	59.8	68.3	68.9
Medium Trucks:	59.6	57.7	50.2	59.0	65.1	65.2
Heavy Trucks:	63.0	61.0	57.6	62.2	68.4	68.5
Vehicle Noise:	69.1	68.5	66.6	65.3	72.3	72.6

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	91	196	421	908
CNEL:	95	205	441	951

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY
Road Name: Harvill Av.
Road Segment: n/o Dwy. 3
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,342 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,714 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.04	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.83	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.62	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	68.4	67.0	61.0	69.5	70.1
Medium Trucks:	60.4	58.5	51.0	59.8	65.9	66.0
Heavy Trucks:	62.0	59.9	56.5	61.2	67.4	67.5
Vehicle Noise:	69.8	69.3	67.5	65.5	72.6	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	190	409	880
CNEL:	93	200	431	929

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY
Road Name: Harvill Av.
Road Segment: n/o Placentia St.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	27,342 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,714 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.04	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.83	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.62	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	68.4	67.0	61.0	69.5	70.1
Medium Trucks:	60.4	58.5	51.0	59.8	65.9	66.0
Heavy Trucks:	62.0	59.9	56.5	61.2	67.4	67.5
Vehicle Noise:	69.8	69.3	67.5	65.5	72.6	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	190	409	880
CNEL:	93	200	431	929

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY
Road Name: Harvill Av.
Road Segment: s/o Placentia St.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,618 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,105 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.95	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.74	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.52	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.4	66.5	65.1	59.1	67.5	68.2
Medium Trucks:	58.5	56.6	49.1	57.8	64.0	64.1
Heavy Trucks:	60.1	58.0	54.6	59.3	65.5	65.6
Vehicle Noise:	67.9	67.4	65.6	63.6	70.7	71.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	66	141	305	657
CNEL:	69	149	322	693

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY
Road Name: Placentia St.
Road Segment: w/o Dwy. 2
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,759 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	236 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-7.69	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-26.48	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-29.26	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.9	58.0	56.6	50.6	59.0	59.7
Medium Trucks:	50.4	48.5	41.0	49.8	55.9	56.0
Heavy Trucks:	52.9	50.8	47.4	52.1	58.3	58.4
Vehicle Noise:	59.7	59.1	57.2	55.7	62.7	63.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	76	164
CNEL:	17	37	80	172

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY
Road Name: Placentia St.
Road Segment: w/o Harvill Av.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS	
Highway Data		**Site Conditions (Hard = 10, Soft = 15)**	
Average Daily Traffic (Adt):	3,759 vehicles	Autos:	15
Peak Hour Percentage:	6%	Medium Trucks (2 Axles):	15
Peak Hour Volume:	236 vehicles	Heavy Trucks (3+ Axles):	15
Vehicle Speed:	40 mph		
Near/Far Lane Distance:	36 feet		
Site Data		**Vehicle Mix**	
Barrier Height:	**0.0 feet**		
Barrier Type (0-Wall, 1-Berm):	0.0		
Centerline Dist. to Barrier:	50.0 feet		
Centerline Dist. to Observer:	50.0 feet		
Barrier Distance to Observer:	0.0 feet		
Observer Height (Above Pad):	5.0 feet		
Pad Elevation:	0.0 feet		
Road Elevation:	0.0 feet		
Road Grade:	0.0%		
Left View:	-90.0 degrees		
Right View:	90.0 degrees		

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-7.69	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-26.48	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-29.26	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	57.9	58.0	56.6	50.6	59.0	59.7
Medium Trucks:	50.4	48.5	41.0	49.8	55.9	56.0
Heavy Trucks:	52.9	50.8	47.4	52.1	58.3	58.4
Vehicle Noise:	59.7	59.1	57.2	55.7	62.7	63.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	76	164
CNEL:	17	37	80	172

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HY
Road Name: Placentia St.
Road Segment: e/o Harvill Av.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS	
Highway Data		**Site Conditions (Hard = 10, Soft = 15)**	
Average Daily Traffic (Adt):	22,370 vehicles	Autos:	15
Peak Hour Percentage:	6%	Medium Trucks (2 Axles):	15
Peak Hour Volume:	1,403 vehicles	Heavy Trucks (3+ Axles):	15
Vehicle Speed:	50 mph		
Near/Far Lane Distance:	58 feet		
Site Data		**Vehicle Mix**	
Barrier Height:	**0.0 feet**		
Barrier Type (0-Wall, 1-Berm):	0.0		
Centerline Dist. to Barrier:	64.0 feet		
Centerline Dist. to Observer:	64.0 feet		
Barrier Distance to Observer:	0.0 feet		
Observer Height (Above Pad):	5.0 feet		
Pad Elevation:	0.0 feet		
Road Elevation:	0.0 feet		
Road Grade:	0.0%		
Left View:	-90.0 degrees		
Right View:	90.0 degrees		

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.30%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.91	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-19.70	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.49	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.1	67.1	65.8	59.8	68.2	68.8
Medium Trucks:	59.1	57.3	49.8	58.5	64.7	64.7
Heavy Trucks:	60.7	58.7	55.3	60.0	66.2	66.2
Vehicle Noise:	68.5	68.1	66.3	64.2	71.4	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	170	366	789
CNEL:	83	179	387	833

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HYP
Road Name: Harvill Av.
Road Segment: n/o Dwy. 3
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS	
Highway Data		**Site Conditions (Hard = 10, Soft = 15)**	
Average Daily Traffic (Adt):	27,380 vehicles	Autos:	15
Peak Hour Percentage:	6%	Medium Trucks (2 Axles):	15
Peak Hour Volume:	1,717 vehicles	Heavy Trucks (3+ Axles):	15
Vehicle Speed:	50 mph		
Near/Far Lane Distance:	48 feet		
Site Data		**Vehicle Mix**	
Barrier Height:	**0.0 feet**		
Barrier Type (0-Wall, 1-Berm):	0.0		
Centerline Dist. to Barrier:	59.0 feet		
Centerline Dist. to Observer:	59.0 feet		
Barrier Distance to Observer:	0.0 feet		
Observer Height (Above Pad):	5.0 feet		
Pad Elevation:	0.0 feet		
Road Elevation:	0.0 feet		
Road Grade:	0.0%		
Left View:	-90.0 degrees		
Right View:	90.0 degrees		

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.02%
Medium Trucks:	48.9%	2.2%	48.9%	1.29%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.03	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.83	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.62	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.3	68.4	67.1	61.0	69.5	70.1
Medium Trucks:	60.4	58.5	51.0	59.8	65.9	66.0
Heavy Trucks:	62.0	59.9	56.5	61.2	67.4	67.5
Vehicle Noise:	69.8	69.3	67.5	65.5	72.6	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	190	409	881
CNEL:	93	200	431	929

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HYP
Road Name: Harvill Av.
Road Segment: n/o Placentia St.
Project Name: Placentia Logistics
Job Number: 12729

SITE SPECIFIC INPUT DATA		NOISE MODEL INPUTS	
Highway Data		**Site Conditions (Hard = 10, Soft = 15)**	
Average Daily Traffic (Adt):	27,399 vehicles	Autos:	15
Peak Hour Percentage:	6%	Medium Trucks (2 Axles):	15
Peak Hour Volume:	1,718 vehicles	Heavy Trucks (3+ Axles):	15
Vehicle Speed:	50 mph		
Near/Far Lane Distance:	48 feet		
Site Data		**Vehicle Mix**	
Barrier Height:	**0.0 feet**		
Barrier Type (0-Wall, 1-Berm):	0.0		
Centerline Dist. to Barrier:	59.0 feet		
Centerline Dist. to Observer:	59.0 feet		
Barrier Distance to Observer:	0.0 feet		
Observer Height (Above Pad):	5.0 feet		
Pad Elevation:	0.0 feet		
Road Elevation:	0.0 feet		
Road Grade:	0.0%		
Left View:	-90.0 degrees		
Right View:	90.0 degrees		

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.03%
Medium Trucks:	48.9%	2.2%	48.9%	1.29%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.03	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-18.83	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-21.62	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	68.4	68.4	67.1	61.0	69.5	70.1
Medium Trucks:	60.4	58.5	51.0	59.8	65.9	66.0
Heavy Trucks:	62.0	59.9	56.5	61.2	67.4	67.5
Vehicle Noise:	69.8	69.3	67.5	65.5	72.6	73.0

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	88	190	409	881
CNEL:	93	200	431	929

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HYP | Project Name: Placentia Logistics
Road Name: Harvill Av. | Job Number: 12729
Road Segment: s/o Placentia St.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	17,709 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,110 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	48 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	59.0 feet
Centerline Dist. to Observer:	59.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.95%
Medium Trucks:	48.9%	2.2%	48.9%	1.31%
Heavy Trucks:	47.3%	5.4%	47.3%	0.75%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	54.129
Medium Trucks:	53.966
Heavy Trucks:	53.982

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-1.93	-0.62	-1.20	-4.69	0.000	0.000
Medium Trucks:	81.00	-20.68	-0.60	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-23.11	-0.60	-1.20	-5.35	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	66.5	66.5	65.2	59.1	67.6	68.2
Medium Trucks:	58.5	56.6	49.1	57.9	64.1	64.1
Heavy Trucks:	60.5	58.4	55.0	59.7	65.9	66.0
Vehicle Noise:	68.0	67.5	65.7	63.8	70.8	71.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	67	145	312	672
CNEL:	71	153	329	708

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HYP | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: w/o Dwy. 2

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,812 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	239 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	97.66%
Medium Trucks:	48.9%	2.2%	48.9%	1.36%
Heavy Trucks:	47.3%	5.4%	47.3%	0.99%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-7.64	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-26.22	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-27.60	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.0	58.0	56.7	50.7	59.1	59.7
Medium Trucks:	50.6	48.8	41.3	50.0	56.2	56.2
Heavy Trucks:	54.5	52.5	49.1	53.8	60.0	60.1
Vehicle Noise:	60.1	59.5	57.5	56.6	63.5	63.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	18	39	85	183
CNEL:	19	41	89	192

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HYP | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: w/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	3,816 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	239 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	50.0 feet
Centerline Dist. to Observer:	50.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.05%
Medium Trucks:	48.9%	2.2%	48.9%	1.28%
Heavy Trucks:	47.3%	5.4%	47.3%	0.67%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	46.915
Medium Trucks:	46.726
Heavy Trucks:	46.744

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	-7.62	0.31	-1.20	-4.65	0.000	0.000
Medium Trucks:	77.72	-26.48	0.34	-1.20	-4.87	0.000	0.000
Heavy Trucks:	82.99	-29.26	0.34	-1.20	-5.43	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	58.0	58.0	56.7	50.7	59.1	59.7
Medium Trucks:	50.4	48.5	41.0	49.8	55.9	56.0
Heavy Trucks:	52.9	50.8	47.4	52.1	58.3	58.4
Vehicle Noise:	59.7	59.2	57.3	55.7	62.7	63.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	16	35	76	164
CNEL:	17	37	80	173

Wednesday, December 11, 2019

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: HYP | Project Name: Placentia Logistics
Road Name: Placentia St. | Job Number: 12729
Road Segment: e/o Harvill Av.

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	22,427 vehicles
Peak Hour Percentage:	6%
Peak Hour Volume:	1,406 vehicles
Vehicle Speed:	50 mph
Near/Far Lane Distance:	58 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	64.0 feet
Centerline Dist. to Observer:	64.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	14.0%	10.5%	98.03%
Medium Trucks:	48.9%	2.2%	48.9%	1.29%
Heavy Trucks:	47.3%	5.4%	47.3%	0.68%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.004	Grade Adjustment:	0.0

Lane Equivalent Distance (in feet)

Autos:	57.271
Medium Trucks:	57.117
Heavy Trucks:	57.132

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	70.20	-0.90	-0.99	-1.20	-4.70	0.000	0.000
Medium Trucks:	81.00	-19.70	-0.97	-1.20	-4.88	0.000	0.000
Heavy Trucks:	85.38	-22.49	-0.97	-1.20	-5.31	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	67.1	67.1	65.8	59.8	68.2	68.9
Medium Trucks:	59.1	57.3	49.8	58.5	64.7	64.7
Heavy Trucks:	60.7	58.7	55.3	60.0	66.2	66.2
Vehicle Noise:	68.5	68.1	66.3	64.2	71.4	71.7

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	79	170	367	790
CNEL:	83	180	387	834

Wednesday, December 11, 2019

APPENDIX 9.1:

CADNAA NOISE MODEL INPUTS

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12729

CadnaA Noise Prediction Model: 12729_06.cna
Date: 14.04.20
Analyst: B. Lawson

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	43.3	41.2	47.8	55.0	45.0	0.0				5.00	r	6258396.85	2244527.33	473.15
RECEIVERS		R2	38.4	38.2	44.8	55.0	45.0	0.0				5.00	r	6257667.69	2244488.27	481.02
RECEIVERS		R3	41.4	41.4	48.1	55.0	45.0	0.0				5.00	r	6257025.32	2244917.96	484.31
RECEIVERS		R4	39.9	39.9	46.5	55.0	45.0	0.0				5.00	r	6257024.32	2245104.55	481.21
RECEIVERS		R5	42.1	42.1	48.8	55.0	45.0	0.0				5.00	r	6257051.67	2245385.24	480.15
RECEIVERS		R6	41.9	41.9	48.6	55.0	45.0	0.0				5.00	r	6257047.11	2245678.72	479.05
RECEIVERS		R7	39.0	38.9	45.6	55.0	45.0	0.0				5.00	r	6257356.20	2245947.04	477.08

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			K0	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night				X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(dB)	(ft)		(ft)	(ft)	(ft)
POINTSOURCE		AC01	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6259022.33	2244707.08	515.18
POINTSOURCE		AC02	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6258965.22	2244706.11	515.18
POINTSOURCE		AC03	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6258628.94	2244701.23	515.18
POINTSOURCE		AC04	88.9	88.9	88.9	Lw	88.9		585.00	0.00	252.00	0.0	5.00	g	6258574.28	2244698.30	515.18

Area Source(s)

ID	Result. PWL			Result. PWL''			Lw / Li		Operating Time			Moving Pt. Src			Height
	Day	Evening	Night	Day	Evening	Night	Type	Value	Day	Special	Night	Number			
	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			(min)	(min)	(min)	Day	Evening	Night	(ft)
PARKING01	79.0	79.0	79.0	43.0	43.0	43.0	Lw	79							5
PARKING02	79.0	79.0	79.0	50.6	50.6	50.6	Lw	79							5
PARKING03	79.0	79.0	79.0	50.5	50.5	50.5	Lw	79							5
DOCK	103.4	103.4	103.4	63.0	63.0	63.0	Lw	103.4							8

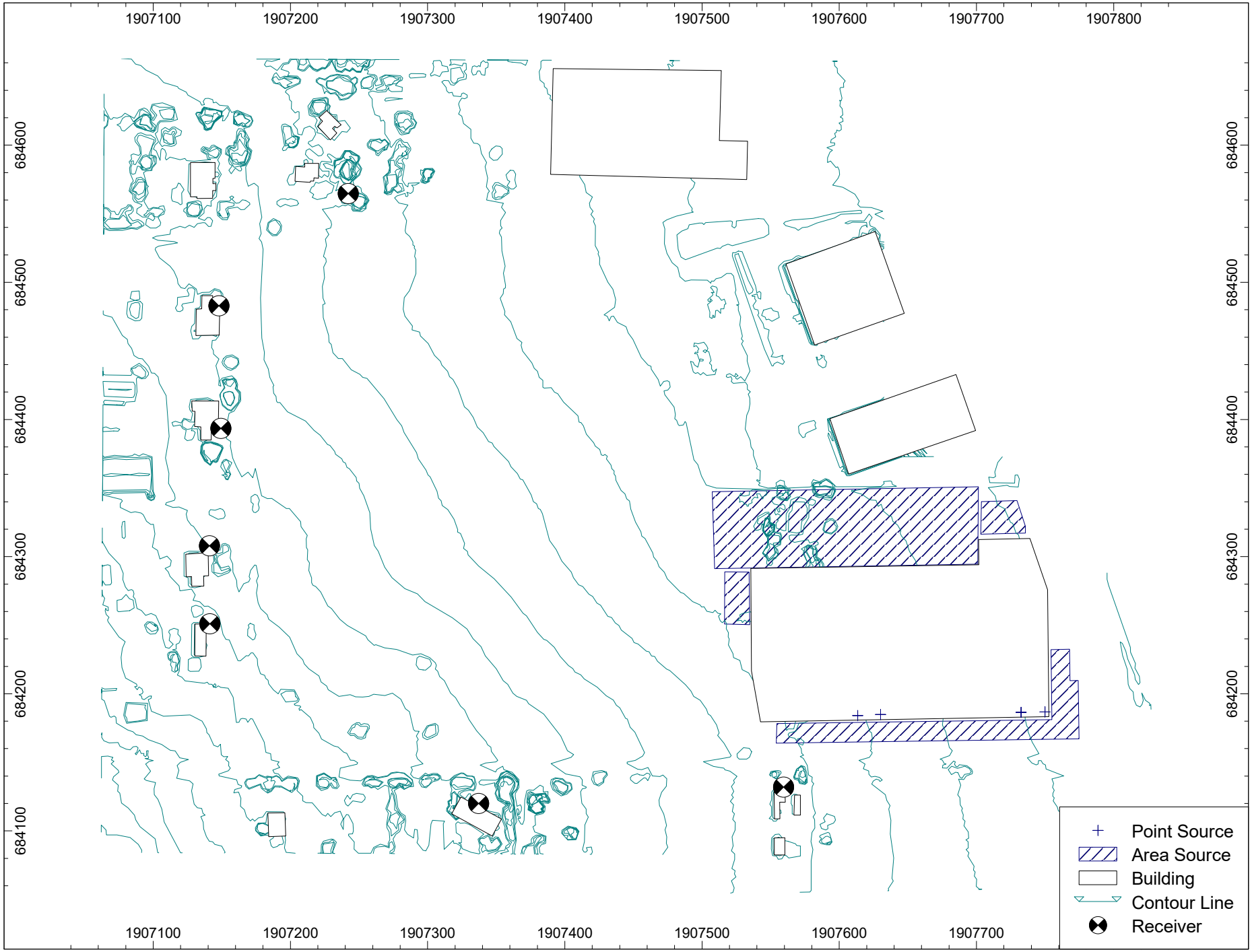
Name	Height				Coordinates			
	Begin		End		x	y	z	Ground
	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
PARKING01	5.00	r			6258381.00	2244679.26	472.99	467.99
					6259038.92	2244688.54	464.82	459.82
					6259036.55	2244856.40	464.70	459.70
					6259080.86	2244857.02	464.33	459.33
					6259081.92	2244782.11	464.36	459.36
					6259101.41	2244782.38	464.21	459.21
					6259103.37	2244642.79	464.54	459.54
					6258379.42	2244632.58	472.03	467.03
PARKING02	5.00	r			6258256.54	2245042.39	471.18	466.18
					6258314.62	2245041.90	471.18	466.18
					6258316.09	2244915.98	471.18	466.18
					6258256.05	2244917.44	471.18	466.18
PARKING03	5.00	r			6258870.05	2245210.29	465.53	460.53
					6258954.97	2245212.73	465.27	460.27
					6258975.47	2245151.72	465.17	460.17
					6258975.47	2245135.12	465.19	460.19
					6258868.58	2245132.68	465.89	460.89
DISTRIBUTION	8.00	r			6258226.28	2245234.20	472.32	464.32
					6258862.73	2245245.91	468.57	460.57
					6258861.26	2245060.94	469.16	461.16
					6258232.14	2245050.20	474.18	466.18

Building(s)

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates				
						Begin		x	y	z	Ground	
						(ft)		(ft)	(ft)	(ft)	(ft)	
Buildings01		BUILDINGS00001	x	0		14.00	r	6257252.02	2246019.25	486.08	472.08	
								6257285.65	2246019.25	486.08	470.11	
								6257284.77	2245983.87	486.08	471.08	
								6257274.25	2245984.75	486.08	472.22	
								6257273.66	2245977.15	486.08	471.06	
								6257266.06	2245977.15	486.08	471.74	
								6257264.89	2245974.22	486.08	471.47	
								6257228.92	2245976.56	486.08	472.08	
								6257230.39	2246012.23	486.08	472.17	
								6257252.02	2246010.77	486.08	472.64	
Buildings02		BUILDINGS00002	x	0		14.00	r	6257283.31	2246107.27	486.08	472.08	
								6257294.71	2246120.42	486.08	472.08	

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								6257286.23	2246128.90	486.08	471.84
								6257304.36	2246145.86	486.08	474.60
								6257338.87	2246111.65	486.08	471.04
								6257329.51	2246104.63	486.08	471.70
								6257323.66	2246108.14	486.08	472.08
								6257318.69	2246102.88	486.08	472.08
								6257328.93	2246091.77	486.08	471.26
								6257313.43	2246075.39	486.08	470.11
Buildings03		BUILDINGS00003	x	0		14.00	r	6257006.11	2245703.16	490.02	476.02
								6257031.84	2245703.16	490.02	476.02
								6257031.84	2245672.17	490.02	477.30
								6257048.80	2245671.29	490.02	474.02
								6257047.34	2245608.42	490.02	474.04
								6256991.49	2245607.84	490.02	476.92
								6256992.66	2245670.41	490.02	476.45
								6257005.82	2245671.29	490.02	477.99
Buildings04		BUILDINGS00004	x	0		14.00	r	6256982.13	2245451.11	491.11	477.11
								6257046.17	2245451.11	491.11	476.02
								6257045.58	2245388.24	491.11	475.56
								6257028.92	2245388.24	491.11	477.13
								6257028.33	2245357.83	491.11	476.02
								6257003.48	2245357.83	491.11	477.59
								6257003.48	2245389.12	491.11	478.91
								6256988.56	2245389.99	491.11	477.40
								6256989.44	2245425.96	491.11	477.91
								6256983.01	2245426.84	491.11	476.65
Buildings05		BUILDINGS00005	x	0		14.00	r	6256967.51	2245084.72	493.14	479.14
								6257020.95	2245088.24	493.14	477.62
								6257022.15	2245032.94	493.14	477.99
								6257010.27	2245032.68	493.14	478.57
								6257010.79	2245008.44	493.14	477.99
								6256982.04	2245007.82	493.14	479.02
								6256981.54	2245030.90	493.14	479.95
								6256968.68	2245030.63	493.14	478.13
Buildings06		BUILDINGS00006	x	0		14.00	r	6256989.73	2244917.46	495.89	481.89
								6257016.64	2244917.76	495.89	479.76
								6257016.05	2244840.94	495.89	479.82
								6256989.15	2244841.15	495.89	480.96
Buildings07		BUILDINGS00007	x	0		14.00	r	6257163.72	2244465.40	497.20	483.20
								6257204.51	2244465.92	497.20	481.83
								6257206.80	2244410.66	497.20	481.92
								6257166.06	2244408.97	497.20	483.89
Buildings08		BUILDINGS00008	x	0		14.00	r	6257625.43	2244503.71	491.03	477.03
								6257722.67	2244451.19	491.03	476.02
								6257700.43	2244410.58	491.03	476.57
								6257603.50	2244463.65	491.03	481.48
Buildings09		BUILDINGS00009	x	0		35.00	r	6258402.66	2245778.58	499.86	464.86
								6258616.15	2245856.68	499.86	464.73
								6258685.51	2245660.91	499.86	466.80
								6258471.24	2245585.00	499.86	462.83
Buildings10		BUILDINGS00010	x	0		35.00	r	6258507.69	2245408.78	498.68	463.68
								6258809.46	2245514.50	498.68	457.79
								6258856.33	2245380.57	498.68	460.72
								6258552.83	2245275.97	498.68	465.19
Buildings11		BUILDINGS00011	x	0		14.00	r	6256978.81	2246021.24	489.16	475.16
								6257037.63	2246021.23	489.16	475.26
								6257037.73	2245983.54	489.16	476.02
								6257032.56	2245983.53	489.16	476.02
								6257032.59	2245970.66	489.16	476.02
								6257039.62	2245970.68	489.16	476.02
								6257039.66	2245954.62	489.16	475.81
								6257031.68	2245954.60	489.16	476.02
								6257031.73	2245935.63	489.16	474.94
								6256994.24	2245935.53	489.16	476.02
								6256994.23	2245939.43	489.16	476.02
								6256979.02	2245939.39	489.16	476.02
Buildings12		BUILDINGS00012	x	0		35.00	r	6257846.37	2246246.30	499.18	464.18
								6258247.95	2246241.41	499.18	461.72
								6258243.64	2246074.14	499.18	461.84
								6258311.14	2246072.39	499.18	461.42
								6258308.78	2245980.78	499.18	460.98
								6257839.83	2245992.89	499.18	465.10
Buildings13		BUILDINGS00013	x	0		14.00	r	6258374.59	2244518.77	483.72	469.72
								6258388.83	2244518.56	483.72	468.15
								6258388.98	2244505.70	483.72	469.36
								6258400.86	2244505.85	483.72	468.15
								6258401.04	2244491.42	483.72	468.15

Name	M.	ID	RB	Residents	Absorption	Height		Coordinates			
						Begin		x	y	z	Ground
						(ft)		(ft)	(ft)	(ft)	(ft)
								6258387.64	2244491.26	483.72	468.21
								6258388.13	2244451.43	483.72	468.15
								6258375.43	2244451.27	483.72	469.71
Buildings14		BUILDINGS00014	x	0		14.00	r	6258423.55	2244508.35	482.15	468.15
								6258437.30	2244508.35	482.15	467.96
								6258437.30	2244460.65	482.15	467.78
								6258421.88	2244460.65	482.15	468.15
Buildings15		BUILDINGS00015	x	0		14.00	r	6258375.01	2244406.06	483.84	469.84
								6258400.01	2244406.27	483.84	468.15
								6258400.01	2244365.02	483.84	468.46
								6258375.01	2244365.02	483.84	469.23
Barker		BUILDINGS00016		0		44.00	r	6258318.91	2245050.36	510.18	466.18
								6258863.85	2245059.43	510.18	461.14
								6258863.32	2245119.74	510.18	460.97
								6258986.08	2245121.88	510.18	460.09
								6259028.25	2244999.65	510.18	459.76
								6259031.45	2244695.96	510.18	459.87
								6258341.86	2244683.68	510.18	467.52
								6258320.51	2244805.37	510.18	466.18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Area Source
Building
Contour Line
Receiver