4.9 NOISE

This section of the EIR evaluates the potential for noise and groundborne vibration impacts resulting from construction and operation of the Palm Avenue Distribution Center. This includes the potential for the proposed project to result in impacts associated with a substantial temporary and/or permanent increase in ambient noise levels in the vicinity of the project site; exposure of people to excessive noise levels, groundborne vibration, or groundborne noise levels; and whether this exposure is in excess of standards established in the City of San Bernardino General Plan or noise ordinance. Finally, mitigation measures intended to reduce impacts to noise and vibration are proposed, where appropriate, to avoid or reduce significant impacts of the proposed project.

Data used to prepare this analysis were obtained from the City of San Bernardino General Plan (General Plan) and associated EIR, the City of San Bernardino Municipal Code, previous environmental studies prepared for the project site, the Federal Transit Administration's Transit Noise and Vibration Impact Assessment methodology, as well as other data sources. All noise measurements taken on and off site for this project, as well as all noise modeling outputs done in preparation of this project are provided in Appendix J of this document. Traffic information from the traffic impact analysis performed for the proposed project by Crain & Associates (*Traffic Impact Analysis Report for the Palm Avenue Warehouse/Distribution Center Project*, December 2007) was used to prepare the noise modeling for vehicular sources. Full bibliographic entries for all referenced materials and communication are provided in Section 4.9.5 (References).

No comment letters related to noise were received in response to the notice of preparation (NOP) circulated on August 3, 2007, for the proposed project.

4.9.1 Environmental Setting

Fundamentals of Sound and Environmental Noise

Sound is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Because the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise, on the other hand, is typically defined as unwanted sound. A typical noise environment consists of a base of steady "background" noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway. Table 4.9-1 (Representative Environmental Noise Levels) lists representative noise levels for the environment.

Table 4.9-1 Representative Environmental Noise Levels		
Common Outdoor Activities	*Noise Level (dBA)*	*Common Indoor Activities*
	—110—	Rock Band
Jet Fly-over at 100 feet	—105—	
	—100—	
Gas Lawnmower at 3 feet	—95—	
	—90—	
	—85—	Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime	—75—	
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area	—65—	Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	
	—55—	Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
	—45—	
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime	—35—	
	—30—	Library
Quiet Rural Area during Nighttime	—25—	Bedroom at Night, Concert Hall (background)
	—20—	
	—15—	Broadcast/Recording Studio
	—10—	
	—5—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing
SOURCE: California Department of Transportation 1998		

Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise upon people largely depends upon the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The rating scales of L_{eq}, L_{min}, $L_{maX,}$ and $L_{(X)}$ are measures of ambient noise, while the L_{dn} and Community Noise Equivalent Level (CNEL) are measures of community noise. L_{eq} is the average A-weighted sound level measured over a given time interval. L_{eq} can be measured over any time period, but is typically measured for 1-minute, 15-minute, 1-hour, or 24-hour periods. CNEL is another average A-weighted sound level measured over a 24-hour time period. However, this noise scale is adjusted to account for some individuals' increased sensitivity to noise levels during the evening and nighttime hours. L_{eq}, L_{min}, and L_{maX}, as well as L_{dn} and CNEL are all applicable to this analysis and defined as follows:

- L_{eq}, the equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- L_{dn}, the Day-Night Average Level, is a 24-hour average L_{eq} with a 10 dBA "weighting" added to noise during the hours of 10:00 PM to 7:00 AM to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
- *CNEL*, the Community Noise Equivalent Level, is a 24-hour average L_{eq} with a 5 dBA "weighting" during the hours of 7:00 PM to 10:00 PM and a 10 dBA "weighting" added to noise during the hours of 10:00 PM to 7:00 AM to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24 hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
- L_{min}, the minimum instantaneous noise level experienced during a given period of time.
- L_{maX}, the maximum instantaneous noise level experienced during a given period of time.
- L(x) is a statistical descriptor where X describes the noise level exceeded X percent of a specified time period. The value of X is commonly 10. Other values of 50 and 90 are sometimes also used (examples: L_{10}, L_{50}, L_{90}).

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night, or over a 24-hour period, as represented by the L_{dn} or the CNEL. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime noise levels are isolated, natural settings that can provide noise levels as low as 20 dBA and quiet, suburban, residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher noise levels associated with more noisy urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA).

When evaluating changes in 24-hour community noise levels, a difference of 3 dBA is a barely perceptible increase to most people. A 5 dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness. New development within a community could potentially lead to activities that increase the 24-hour community noise levels.

Noise Attenuation

Noise levels from a particular source decline as distance to the receptor increases. Other factors, such as the weather and other reflecting or shielding factors, also help intensify or reduce the noise level at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically "hard" locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically "soft" locations (i.e., the area between the source and

receptor is unpacked earth or has vegetation, including grass). Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units and office buildings is generally 30 dBA or more.

Fundamentals of Environmental Groundborne Vibration

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and, in the U.S., is expressed as vibration decibels (VdB).

The background vibration velocity level in residential and educational areas is usually around 50 VdB. The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is rarely perceptible. Groundborne vibration is almost never annoying to people who are outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of a building, the motion does not provoke the same adverse human reaction. In addition, the rumble noise that usually accompanies building vibration is perceptible only inside buildings.

The range of interest in groundborne vibration 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.

The general human response to different levels of groundborne vibration velocity levels is described in Table 4.9-2 (Human Response to Different Levels of Groundborne Vibration).

Table 4.9-2 Human Response to Different Levels of Groundborne Vibration

Vibration Velocity Level	*Human Reaction*
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

SOURCE: HMMH 2006

The vibration velocity levels for the types of construction equipment that would operate within the project site during construction are shown below in Table 4.9-3 (Vibration Source Levels for Construction Equipment).

Table 4.9-3 Vibration Source Levels for Construction Equipment

Construction Equipment	*Approximate VdB at 25 feet*
Large Bulldozer	87
Caisson Drilling	87
Loaded Trucks	86
Jackhammer	79
Small Bulldozer	58

SOURCE: HMMH 2006

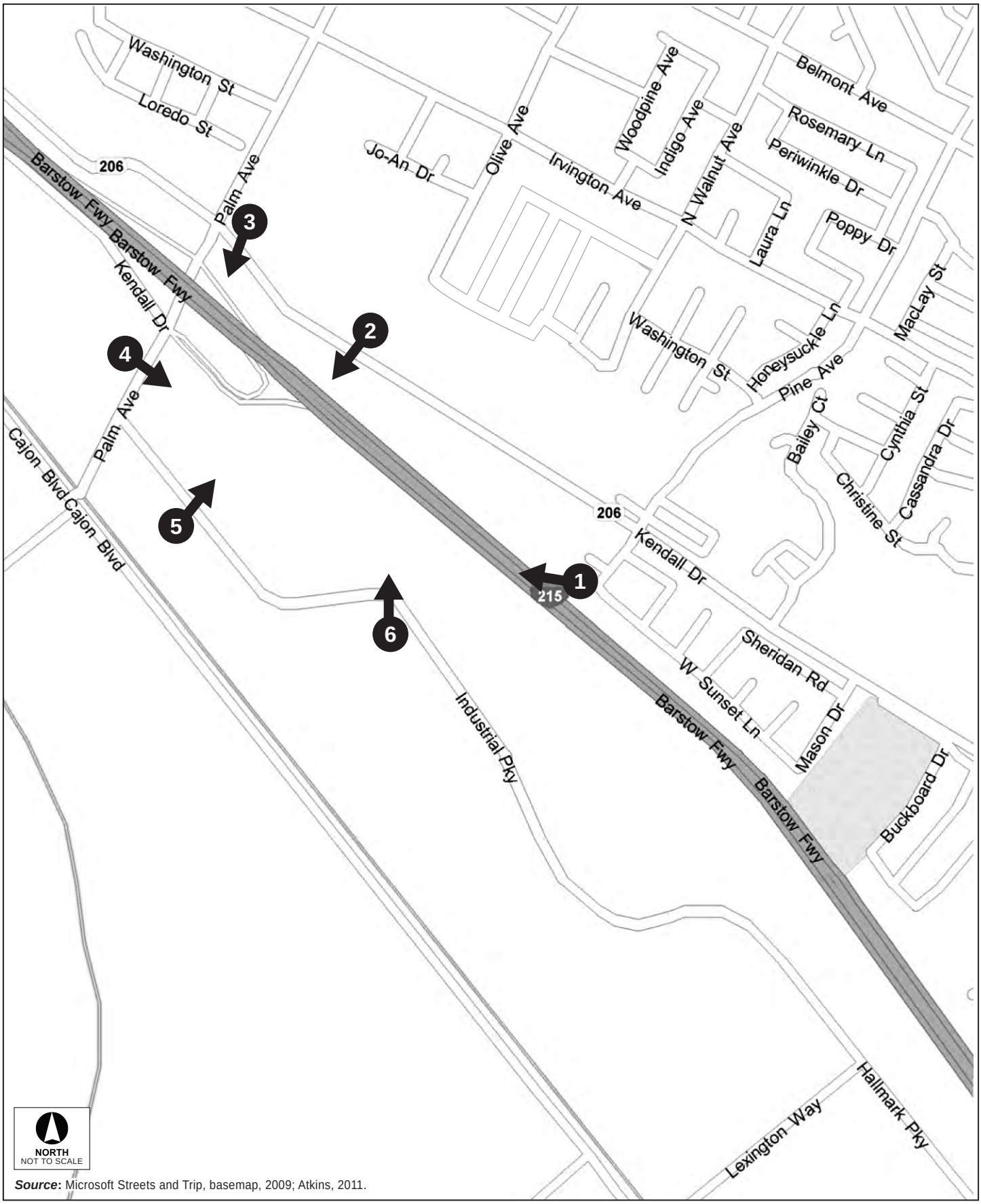
Existing and Surrounding Uses

The approximately 38.4-acre project site is located adjacent and to the south of Interstate 215 (I-215), and approximately three miles east of Interstate 15 (I-15). Specifically, the project site is situated on the northeast corner of the intersection of Palm Avenue and Industrial Parkway. Land use in the immediate vicinity of the project site is a mix of commercial and industrial uses with residential uses located approximately 1,650 feet to the north at the intersection of Palm Avenue and Little League/Kendall Drive. A gasoline service station and restaurant adjoin the northwest corner of the project site, with I-215 bounding the north and east of the site. A machine shop is located south of the project site.

Existing Environmental Noise Levels

According to the General Plan, the predominant noise sources in the City of San Bernardino are motor vehicles, aircraft, and trains. Freeways and a number of arterials expose nearby areas to significant noise levels. Aircraft from the San Bernardino International Airport (SBIA) and other aircraft overflights impact the City as well.

The noise environment in the vicinity of the project site is dominated by traffic noise from the nearby roadways, including I-215, Palm Avenue, Cajon Boulevard, and Kendall Drive. Noise monitoring was conducted by PBS&J in the vicinity of the project site on September 23, 2010, between the hours of 2:20 PM and 5:00 PM. Two daytime noise measurements were also taken in the vicinity of Chavez Middle School and Palm Elementary School between the hours of 1:30 PM and 2:30 PM when students were present. Additionally, because the proposed project would be operating for 24-hours, noise measurements were taken at the same locations on the evening of September 23, 2010 between the hours of 10:00 PM and 12:30 AM in order to establish existing nighttime noise levels in the vicinity of the project site. All noise measurements were conducted using a Larson-Davis Model 814 precision sound level meter, which satisfies the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation and lasted for 15 minutes each. Figure 4.9-1 (Location of Noise Monitoring) shows the locations of the noise monitoring. As shown in Table 4.9-4 (Summary of Noise



Source: Microsoft Streets and Trip, basemap, 2009; Atkins, 2011.

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Figure 4.9-1
Noise Monitoring Location

ATKINS

Monitoring), Peak Hour noise levels within the vicinity of the project site range from 57.4 dBA L_{eq} to 72.4 dBA L_{eq}, while nighttime noise levels range from 53.8 dBA L_{eq} to 67.6 L_{eq} dBA, which is a typical noise range for areas in the vicinity of well traveled roadways with little or no intervening structures to deflect and reduce roadway noise levels. As such, existing ambient noise levels are consistent with typical undeveloped areas within an urban environment.

Table 4.9-4 Summary of Noise Monitoring

Location	Description	Run Time	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)
Peak Hour Measurements					
1	Chavez Middle School	September 23 15 min	60.2	48.0	76.6
2	Palm Elementary School	September 23 15 min	60.4	44.1	73.0
3	Southeast corner of Palm Avenue and Kendall Drive	September 23 15 min	66.6	58.4	81.3
4	East side Kendal Drive, between Palm Avenue and 215-offramp	September 23 15 min	72.2	57.9	80.0
5	Southeast corner of Pine Avenue and Kendal Drive	September 23 15 min	68.6	47.7	85.9
6	Northwest corner of New Pine Avenue and Sunset Lane	September 23 15 min	57.4	48.3	69.8
7	2673 Sunset Lane	September 23 15 min	60.3	49.5	76.8
8	East side of Palm Avenue, across from 5975 Palm Avenue	September 23 15 min	72.4	55.5	91.1
9	5770 Industrial Parkway	September 23 15 min	69.7	42.7	87.4
10	300 yards north of 5685 Industrial Parkway	September 23 15 min	66.2	50.1	78.6
Nighttime Measurements					
1n	Chavez Middle School	No Night Measurements	NA	NA	NA
2n	Palm Elementary School	No Night Measurements	NA	NA	NA
3n	Southeast corner of Palm Avenue and Kendall Drive	September 23 15 min	62.9	52.2	75.8
4n	East side Kendal Drive, between Palm Avenue and 215-offramp	September 23 15 min	67.0	53.2	81.0
5n	Southeast corner of Pine Avenue and Kendal Drive	September 23 15 min	60.4	50.2	71.5
6n	Northwest corner of New Pine Avenue and Sunset Lane	September 23 15 min	53.8	45.3	67.7

Table 4.9-4 Summary of Noise Monitoring

Location	Description	Run Time	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)
7n	2673 Sunset Lane	September 23 15 min	54.8	49.0	66.9
8n	East side of Palm Avenue, across from 5975 Palm Avenue	September 23 15 min	67.6	53.4	88.5
9n	5770 Industrial Parkway	September 23 15 min	58.3	51.5	74.9
10n	300 yards north of 5685 Industrial Parkway	September 23 15 min	59.2	51.5	76.8

SOURCE: PBS&J 2010

Existing Roadway Noise Levels Off Site

Roadway noise levels were calculated using the Federal Highway Administration Highway Noise Prediction Model (FHWA-RD-77-108; FHWA Model) and traffic volumes from the project traffic study, available in Appendix L2 of this EIR. The model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. Noise emissions for vehicles are dependent on a range of characteristics related to the vehicles and the highways they travel. Among these are vehicle type, engine size, speed, number of wheels and axles, type of tires, as well as pavement type, age, texture and conditions. The *Technical Noise Supplement* (Caltrans 1998) shows that California automobile noise emissions are 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise emissions are 0.3 to 3.0 dBA lower than national levels. As such, the average vehicle noise rates (energy rates) used in the FHWA Model have been modified to reflect average vehicle noise rates identified for California by Caltrans (Caltrans 1998). As previously stated, the reduction in noise levels due to the atmosphere and hard ground surface (the drop-off rate) is 3 dB per doubling of distance.

The average daily noise levels along these roadway segments on a weekday presented in Table 4.9-5 (Existing Roadway Noise Levels Off Site). These modeled roadway noise levels are consistent with the peak hour noise measurements taken for the proposed project, as shown in Table 4.9-4 above.

Sensitive Uses

The City of San Bernardino has defined sensitive uses as land uses and/or receptors to include residences, schools, hospitals, and convalescent facilities. Sensitive uses from a noise perspective include places where there is a reasonable expectation that individuals could be sleeping, learning, worshipping, or recuperating. The closest noise-sensitive uses to the project site are the residential uses located approximately 1,650 feet to the north along Palm Avenue.

Table 4.9-5 Existing Roadway Noise Levels Off Site		
	Sound Level at 50 feet from Centerline (dBA CNEL)	
Roadway Segment	*Land Use*	*Existing Noise Level*
Palm Avenue, n of Little League Drive	Residential	63.7
Palm Avenue, s of Little League Drive	Industrial	66.9
Palm Avenue, n of 215 NB Ramp	Industrial	67.0
Palm Avenue, s of 215 NB Ramp	Industrial	64.9
Palm Avenue, n of 215 SB Ramp	Industrial	65.0
Palm Avenue, s of 215 SB Ramp	Industrial	62.0
Palm Avenue, n of Industrial Parkway	Industrial	62.4
Palm Avenue, s of Industrial Parkway	Industrial	58.5
Palm Avenue, n of Cajon Boulevard	Industrial	58.6
Palm Avenue, s of Cajon Boulevard	Industrial	55.8
Little League Drive, e of Palm Avenue	Residential	59.4
Kendall Drive, w of Palm Avenue (n of I-215)	Industrial	64.9
Kendall Drive, e of Palm Avenue (s of I-215)	Industrial	60.0
Industrial Parkway, e of Palm Avenue	Industrial	41.0
Industrial Parkway, w of Palm Avenue	Industrial	59.3
Cajon Boulevard, e of Palm Avenue	Industrial	57.2
Cajon Boulevard, w of Palm Avenue	Industrial	58.1

SOURCE: PBS&J 2007

Model: Federal Highway Administration Highway Noise Prediction Model (FHWA-RD-77-108; FHWA Model, also known as LEQV2)

Existing Groundborne Vibration Levels

The greatest regular source of groundborne vibration at the project site and in the immediate vicinity is roadway truck and bus traffic. These trucks and buses typically generate noticeable groundborne vibration velocity levels at the edge of the road as they travel along the roadway.

4.9.2 Regulatory Framework

Federal

There are no federal policies that would apply to noise for the proposed project.

State

There are no state policies that would apply to noise for the proposed project.

Regional

There are no regional policies that would apply to noise for the proposed project.

Local

The primary regulatory documents that establish noise standards in the City of San Bernardino are the General Plan Noise Element and the Noise Control Ordinance. Relevant standards from both documents are discussed below.

City of San Bernardino General Plan

As mandated by Section 65302(f) of the California Government Code, the City of San Bernardino has adopted a noise element as a component of the City of San Bernardino General Plan. Local General Plans identify general principles intended to guide and influence development plans. General Plans recognize that different types of land uses have different sensitivities toward their noise environment; residential areas are generally considered to be the most sensitive type of land use to noise and industrial/commercial areas are generally considered to be the least sensitive. Noise Ordinances set forth the specific standards and procedures for addressing particular noise sources and activities. Local noise ordinances typically set forth standards related to construction activities, nuisance-type noise sources, and industrial property line noise levels. The City of San Bernardino noise regulations and standards apply to the land uses near the project site.

The following City of San Bernardino General Plan policies are relevant to the Proposed Project:

14.1.4 Prohibit the development of new or expansion of existing industrial, commercial, or other uses that generate noise impacts on housing, schools, health care facilities or other sensitive uses above a L_{dn} of 65 dB(A).

14.2.3 Require that development that increases the ambient noise level adjacent to noise-sensitive land uses provide appropriate mitigation measures.

14.2.19 As may be necessary, require acoustical analysis and ensure the provision of effective noise mitigation measures for sensitive land uses, especially residential uses, in areas significantly impacted by noise.

14.3.1 Require that construction activities adjacent to residential units be limited as necessary to prevent adverse noise impacts.

14.3.2 Require that construction activities employ feasible and practical techniques that minimize the noise impacts on adjacent uses.

14.3.3 Adopt and enforce a standard for exterior noise levels for all commercial uses that prevents adverse levels of discernible noise on adjoining residential properties.

City of San Bernardino Municipal Code

The City of San Bernardino Noise Ordinance (Section 19.20.030.15 of the Development Code) specifies the maximum acceptable levels of noise for residential uses in the City. These standards indicate that exterior noise levels at residential locations should not exceed a CNEL of 65 dB while interior levels shall not exceed an annual CNEL of 45 dB in any habitable room.

In addition to the exterior and interior noise standards, the City of San Bernardino Municipal Code sets forth prohibitions and exemptions for certain noise producing activities in Chapter 8.54 (Noise). Section 8.54.020 (Prohibited Acts) details the activities prohibited by the Municipal Code, of which the following would apply to the proposed project:

8.54.020 Prohibited Acts

It shall be unlawful for any person to engage in the following activities:

A. Sounding any horn or signal device on any automobile, motorcycle, bus, or other motor vehicle in any other manner or circumstances or for any other purpose than required or permitted by the California Vehicle Code, or other laws, for an unnecessary or unreasonable period of time

B. Racing the engine of any motor vehicle while the vehicle is not in motion, except when necessary to do so in the course of repairing, adjusting, or testing the same

C. Operating or permitting the use of any motor vehicle on any public right-of-way or public place or on private property within a residential zone for which the exhaust muffler, intake muffler, or any other noise abatement device has been modified or changed in a manner such that the noise emitted by the motor vehicle is increased above that emitted by the vehicle as originally manufactured

D. Using, operating, or permitting to be played, used or operated any radio receiving set, musical instrument, phonograph, or other sound amplification or production equipment for producing or reproducing sound in such a manner as to disturb the peace, quiet, or comfort of neighboring persons, or at any time with louder volume than is necessary for the convenient hearing of the person or persons who are in the room, vehicle, or other enclosure in which such machine or device is operated, and who are voluntary listeners thereto and that is:

   1. Plainly audible across property boundaries
   2. Plainly audible through partitions common to two residences within a building
   3. Plainly audible at a distance of 50 feet in any direction from the source of the music or sound between the hours of 8:00 AM and 10:00 PM.
   4. Plainly audible at a distance of 25 feet in any direction from the source of the music or sound between the hours of 10:00 PM and 8:00 AM.

E. The intentional sounding or permitting the sounding outdoors of any fire, burglar, or civil defense alarm, siren, whistle, or any motor vehicle burglar alarm, except for emergency purposes or for testing, unless such alarm is terminated within fifteen minutes of activation

F. Yelling, shouting, whistling, or singing in a loud and boisterous manner on the public streets so as to disturb the quiet, comfort, or repose of persons in any office, dwelling, hotel, or other type of residence, or neighborhood

H. The unnecessary or excessive blowing of whistles, sounding of horns, ringing of bells, or use of signaling devices by operators of trains, motor trucks, and other transportation equipment

I. The creation of loud and excessive noise in connection with the loading or unloading of motor trucks and other vehicles

L. The operation or use between the hours of 10:00 PM and 8:00 AM of any pile driver, steam shovel, pneumatic hammers, derrick, steam or electric hoist, power driven saw, or any other tool or apparatus, the use of which is attended by loud and excessive noise, except with the approval of the City

N. Making or knowingly and unreasonably permitting to be made any unreasonably loud, unnecessary, or unusual noise that disturbs the comfort, repose, health, peace and quiet, or which causes discomfort or annoyance to any reasonable person of normal sensitivity. The characteristics and conditions that may be considered in determining whether this section has been violated include, but are not limited to, the following:

1. The level of noise; [Rev. July 16, 2007] 8-69
2. The level of background noise
3. The proximity of the noise to sleeping facilities
4. The nature and zoning of the areas within which the noise emanates
5. The density of the inhabitation of the area within which the noise emanates
6. The time of day or night the noise occurs
7. The duration of the noise
8. Whether the noise is recurrent, intermittent, or constant
9. Whether the noise is produced by a commercial or noncommercial activity. (Ord. MC-1246, 5-21-07; Ord. 2102, 1956; Ord. 1925 Section 2, 1951.)

In addition to prohibited activities, the City of San Bernardino Municipal Code Section 8.54.050 (Controlled Hours of Operation) establishes time limits on noise producing activities in order to ensure that such activities do not intrude upon recognized sleep hours within residential areas, or where sensitive uses may be located outside of residentially zoned areas. The following restrictions would apply to the proposed project:

8.54.050 Controlled Hours of Operation

It shall be unlawful for any person to engage in the following activities other than between the hours of 8:00 AM and 8:00 PM in residential zones and other than between the hours of 7:00 AM and 8:00 PM in all other zones:

B. Load or unload any vehicle, or operate or permit the use of dollies, carts, forklifts, or other wheeled equipment that causes any impulsive sound, raucous, or unnecessary noise within one thousand (1,000) feet of a residence.

C. Operate or permit the use of domestic power tools, or machinery or any other equipment or tool in any garage, workshop, house, or any other structure.

E. Operate or permit the use of privately operated street/parking lot sweepers or vacuums, except that emergency work and/or work necessitated by unusual conditions may be performed with the written consent of the City Manager.

F. Operate or permit the use of electrically operated compressor, fan, and other similar devices.

G. Operate or permit the use of any motor vehicle with a gross vehicle weight rating in excess of ten thousand (10,000) pounds, or of any auxiliary equipment attached to such a vehicle, including, but not limited to, refrigerated truck compressors for a period longer than fifteen (15) minutes in any hour while the vehicle is stationary and on a public right-of-way or public space except when movement of said vehicle is restricted by other traffic.

H. Repair, rebuild, reconstruct, or dismantle any motor vehicle or other mechanical equipment or devices in a manner so as to be plainly audible across property lines. [Rev. July 16, 2007] 8-71 (Ord. MC-1246, 5-21-07)

Further, the City of San Bernardino Municipal Code, under Section 8.54.060 provides exemptions to the noise limits described above. The following exemptions would apply to the proposed project:

8.54.060 Exemptions

The following activities and noise sources shall be exempt from the provisions of this chapter:

B. Such noises as are an accompaniment and effect of a lawful business, commercial or industrial enterprise carried on in an area zoned for that purpose, except where there is evidence that such noise is a nuisance and that such a nuisance is a result of the employment of unnecessary and injurious methods of operation.

I. Construction, repair, or excavation work performed pursuant to a valid written agreement with the City, or any of its political subdivisions, which provides for noise mitigation measures.

J. Any activity to the extent that regulation thereof has been preempted by state or federal law. (Ord. MC-1246, 5-21-07)

Section 8.54.070 specifies the time limits that construction activity may occur within as such:

8.54.070 Disturbances from Construction Activity. [Rev. July 16, 2007] 8-72

No person shall be engaged or employed, or cause any other person to be engaged or employed, in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours of 7:00 AM and 8:00 PM (Ord. MC-1246, 5-21-07).

Consistency Analysis

The 2005 City of San Bernardino General Plan designates the Project site as Industrial Light (IL). Additionally, the proposed project is within the Light Industrial Zoning District. This District is intended to retain, enhance, and intensify existing and provide for the new development of lighter industrial uses along major vehicular, rail, and air transportation routes serving the City, and therefore, the proposed

project is consistent with Policy 14.1.4. The preparation of this EIR ensures compliance with Policy 14.2.19. This EIR analyzes the potential increase in ambient noise levels due to development of the proposed project, and no significant impact was found on residential or other noise-sensitive uses because the proposed project would be located approximately 1,650 feet from the nearest noise-sensitive uses.

4.9.3 Project Impacts and Mitigation Measures

Analytic Method

The methodology for determining a significant impact relating to noise is the same on a program and a project level. Implementation of the proposed project could generate noise that may exceed permitted City noise levels. The primary sources of noise associated with the proposed project would be construction activities within the project area and project-related traffic. Secondary sources of noise would include new stationary sources (such as heating, ventilation, and air conditioning units) and increased human activity throughout the project site. The net increase in noise generated by these activities and other sources have been quantitatively estimated and compared to the applicable noise standards and thresholds of significance.

Aside from noise levels, groundborne vibration would also be generated during the construction phase of the proposed project, including the proposed roadway improvements, by various types of construction equipment. Thus, the groundborne vibration levels generated by construction equipment have also been quantitatively estimated and compared to applicable thresholds of significance.

Construction Noise Levels

Construction noise levels were estimated by data published by the U.S. Environmental Protection Agency (USEPA). Potential noise levels are identified for off-site locations that are sensitive to noise, including residences and schools on the site.

The USEPA has compiled data regarding the noise-generating characteristics of typical construction activities. The data are presented in Table 4.9-6 (Typical Outdoor Construction Noise Levels). These noise levels would diminish rapidly with distance from the construction site, at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 86 dBA measured at 50 feet from the noise source to the receptor would reduce to 80 dBA at 100 feet from the source to the receptor, and reduce by another 6 dBA, to 74 dBA, at 200 feet from the source to the receptor.

Roadway Noise Levels

Roadway noise levels have been calculated for various locations around the Specific Plan Area. The noise levels were calculated using the FHWA-RD-77-108 model and traffic volumes from the project traffic study. Caltrans data show that California automobile noise is 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dBA lower than national levels. As such, the average vehicle noise rates (energy rates) used in the FHWA Model have been modified to reflect average vehicle

Table 4.9-6 Typical Outdoor Construction Noise Levels					
Construction Phase	*Noise Level at 50 feet with Mufflers (dBA L_{eq})*	*Noise Level at 100 feet with Mufflers (dBA L_{eq})*	*Noise Level at 200 feet with Mufflers (dBA L_{eq})*	*Noise Level at 800 feet with Mufflers (dBA L_{eq})*	*Noise Level at 1,600 feet with Mufflers (dBA L_{eq})*
Ground Clearing	82	76	70	56	50
Excavation/Grading	86	80	74	62	56
Foundations	77	71	65	53	47
Structural	83	77	71	59	53
External Finishing	86	80	74	62	56

SOURCE: USEPA 1971

noise rates identified for California by Caltrans. Traffic volumes used in the FHWA model are derived from the project traffic study, which is provided in its entirety in Appendix L2 and summarized in Section 4.11 (Transportation/Traffic) of this document.

Vibration Levels Associated with Construction Equipment

Groundborne vibration levels resulting from construction activities occurring within the Project Site and along roadways where traffic mitigation would occur were estimated by data published by Harris Miller Miller & Hanson, Inc. for the FTA. Potential vibration levels are identified for on- and off-site locations that are sensitive to vibration, including residences and schools within the vicinity of the project site.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the 2011 CEQA Guidelines and City-specific thresholds, where applicable. For the purposes of this EIR, implementation of the proposed project may result in a potentially significant impact if the proposed project would:

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

Human Exposure to Noise

The CEQA Guidelines do not define the levels at which temporary and permanent increases in ambient noise are considered "substantial." As discussed previously in this section, a noise level increase of 3 dBA is barely perceptible to most people, while a 5 dBA increase is readily noticeable and a difference of 10 dBA would be perceived as a doubling of loudness. Based on this information, the following thresholds would apply to the operational characteristics of the Proposed Project:

- Less than 3 dBA: not discernable: not significant
- Less than 5 dBA: noticeable, but not significant, if noise levels remain below City's 65 dBA noise level standard at sensitive land uses
- 3 dBA or greater: potentially significant if the noise increase would meet or exceed the City's 65 dBA noise level standard at sensitive land uses
- 5 dBA or greater: potentially significant

Human Exposure to Groundborne Vibration

The CEQA Guidelines also do not define the levels at which groundborne vibration or groundborne noise is considered "excessive." For the purpose of this analysis, groundborne vibration impacts associated with human annoyance would be significant if the Proposed Project exceeds 85 VdB, which is the vibration level that is considered by the FTA to be the threshold for human annoyance as described in Table 4.9-2 (Human Response to Different Levels of Groundborne Vibration). In terms of groundborne vibration impacts on structures, this analysis uses the FTA's vibration damage threshold of approximately 100 VdB for fragile buildings and approximately 95 VdB for extremely fragile historic buildings (HMMH 2006).

Less-Than-Significant Impacts

Threshold	Would the project result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Impact 4.9-1 **Construction activities associated with the proposed project would not generate noise levels that exceed the noise standards established by the City of San Bernardino Municipal Code at off-site sensitive receptors. Project requirement PR4.9A would ensure that this impact would remain *less than significant*.**

Construction of the proposed project would include the development of a warehouse/distribution facility consisting of a single building totaling 678,275 square feet (sf). Lot coverage would be 43 percent and the proposed building height would not exceed 40 feet. The existing hills would be leveled and all soil exported. Excavation and grading activities would last approximately 12 months and construction of the distribution facility would last an additional 7 months and finishing and landscaping would last an additional 3 months for a total of 22 months of construction activities. Approximately 57 round-trip

truck trips per day would occur during the excavation and grading phases, mostly due to soil exportation; however, these haul trucks would travel along Palm Avenue to I-215 and would not travel through residential areas within the City of San Bernardino. The project applicant anticipates that construction activities would occur between the hours of 7:00 AM and 8:00 PM. Estimates for noise levels generated by construction equipment is based upon available data presented by the USEPA and the FTA's *Transit Noise and Vibration Impact Assessment, Final Report*, of May 2006.

Construction activities would also involve the use of smaller power tools, generators, and other equipment that generate noise. Haul trucks using the local roadways would generate noise as they move along the road. Each stage of construction would involve a different mix of operating equipment, and noise levels would vary based on the amount and types of equipment in operation and the location of the activity. Based on the information presented in Table 4.9-6 and the diminishment of noise levels at a rate of 6 dBA per doubling of distance, the noisiest phase of construction would not exceed the 65 dBA L_{eq} exterior noise limit at a distance of 1,600 feet. The closest existing noise-sensitive locations are the residential uses located approximately 1,650 feet north of the project site and north of the I-215. In order to ensure that construction noise activities do not create an impact and in accordance with Section 8.54.060 (I) of the City of San Bernardino Municipal Code, the following project requirement shall be implemented, as required by federal, state, or local statute or code:

PR4.9A *As required by Section 8.54.060(I) (Exemptions) of the City of San Bernardino Municipal Code, the project applicant/developer shall require by contract specifications that the following construction best management practices (BMPs) be implemented by contractors to reduce construction noise levels:*

- *Ensure that construction equipment is properly muffled according to industry standards*
- *Place noise-generating construction equipment and locate construction staging areas away from sensitive uses, where feasible*

Further, construction activities would occur between 7:00 AM and 8:00 PM and would not occur during recognized sleep hours, with the highest noise generating activities limited to day time hours. Because construction noise would not generate noise levels above the 65 dBA L_{eq} at the exterior of noise-sensitive land uses, and the contractor would reduce noise levels from construction equipment as feasible, and construction activities would be limited to daytime hours, this impact would be ***less than significant***.

Impact 4.9-2 **Operation of the proposed project would not generate noise levels that exceed the noise standards established by the City of San Bernardino Municipal Code at off-site sensitive receptors. Therefore, this impact would be considered *less than significant*.**

Sources of noise generated by implementation of the proposed project would include new stationary sources, such as rooftop heating, ventilation, and air conditioning (HVAC) systems for the warehouse and distribution facility. The proposed project would also introduce new activity and noise to the area as heavy trucks travel to and from the distribution center. The effects of these trucks on roadway noise levels will be further described under Impact 4.9-6 regarding increases in ambient noise.

The introduction of new stationary noise sources would not result in an increase in noise levels above the 65 dBA L_{eq} exterior standard established by the municipal code. Large scale HVAC system generally

result in noise levels that average between 50 and 65 dBA L_{eq} at 50 feet from the equipment. These HVAC units would be mounted within HVAC wells on the rooftops of the proposed buildings and would be screened from view by the wells and other building features. Because the nearest noise-sensitive land uses are located approximately 1,650 feet to the north of the project site, the noise from HVAC and other mechanical equipment at the project site would not exceed the 65 dBA L_{eq} exterior sound limit at these off-site noise sensitive land uses, and therefore, this impact would be considered ***less than significant***.

Threshold	Would the project result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Impact 4.9-3 **Construction activities associated with the proposed project would not generate or expose persons or structures off site to excessive groundborne vibration. This is considered a *less-than-significant* impact.**

Construction activities that would occur under the proposed project within the project site would include excavation, which would have the potential to generate low levels of groundborne vibration. Table 4.9-3 (Vibration Source Levels for Construction Equipment) identifies various vibration velocity levels for the types of construction equipment that would operate within the project site during construction. Based on the information presented in Table 4.9-3, vibration levels could reach as high as approximately 87 VdB within 25 feet of the project site. However, as previously noted, the closest noise and vibration sensitive uses to the project site are located approximately 1,650 feet to the north of the proposed project. Therefore, as none of the on-site or off-site sensitive uses are calculated to be within 25 feet of construction activity at any location, groundborne vibration would not exceed the FTA's vibration impact thresholds for human annoyance, and this impact would be ***less than significant***.

Impact 4.9-4 **Operation of the proposed project would not generate or expose sensitive receptors on site or off site to excessive groundborne vibration or groundborne noise levels. This is considered a *less-than-significant* impact.**

During operation of the proposed project, background operational vibration levels would be expected to average around 50 VdB, as discussed previously in this section. This is substantially less than the FTA's vibration impact threshold of 85 VdB for human annoyance. Groundborne vibration resulting from operation of the proposed project would primarily be generated by the trucks traveling to the project site; however, these trucks would not travel through residential areas, but rather would travel along roadways designated for industrial and commercial uses including Palm Avenue, Industrial Parkway, and the I-215 north- and south-bound ramps. No substantial sources of groundborne vibration would be built as part of the proposed project; therefore, operation of the proposed project would not expose sensitive receptors on site or off site to excessive groundborne vibration or groundborne noise levels, and this impact would be ***less than significant***.

Threshold	Would the proposed project cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Impact 4.9-5 **Construction activities associated with development of the proposed project would result in a substantial temporary or periodic increase in ambient noise levels. However, the project's construction noise impacts would be temporary, would not occur during recognized sleep hours, and would be not impact noise-sensitive uses. Therefore, this impact would be considered *less than significant*.**

Construction activities occurring within the project site would involve grading, and excavation activities, followed by construction and external finishing of the proposed facilities and associated parking areas, as well as roadway and landscaping improvements. These activities would involve the use of heavy equipment, including an estimated 57 round-trip truck trips per day over a period of 160 days for soil exportation. Construction activities would also involve the use of smaller power tools, generators, and other equipment that generates noise. Each stage of construction would use a different mix of equipment, and noise levels would vary based on the amount and types of equipment in operation and the location of the activity related to potential receptors.

The closest existing noise-sensitive locations are the residential uses located approximately 1,650 feet north of the project site, and as shown in Table 4.9-4, existing noise levels measured in the residential area were 58.4 dBA L_{eq}. Based on the information presented in Table 4.9-6 construction noise level from the proposed project were estimated to range between 47 dBA L_{eq} and 56 dBA L_{eq}. Therefore, construction activities would not result in an increase in noise levels above the existing ambient noise levels and construction noise levels would not exceed the 65 dBA L_{eq} exterior noise limit at a distance of 1,600 feet. Therefore, this impact would be ***less than significant***.

Threshold	Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Impact 4.9-6 **Operation of the proposed project would generate increased local traffic volumes but would not cause a substantial permanent increase in ambient noise levels in the project vicinity that exceeds the threshold of significance established in this EIR. This impact is considered *less than significant*.**

The principal noise source in the project site is traffic on local roadways. The increase in traffic resulting from implementation of the proposed project would increase the ambient noise levels at sensitive off-site locations in the project vicinity. Table 4.9-7 (Projected Noise Levels at Build-out) identifies the changes in future noise levels along the study area roadway segments in the vicinity of the project site, and identifies the land uses along these roadways (e.g., residential uses or industrial). Noise levels were estimated at 75 feet from the roadway center line. Further, all future roadway analysis assumed completion of roadway improvement measures required as part of traffic mitigation measures. As discussed under Section 4.9.3 (Thresholds of Significance) this EIR assumes that the Proposed Project's contribution to an increase in noise levels of less than 3.0 dBA would not be significant; an increase of

3.0 dBA or greater over ambient noise levels is substantial and significant if the projects contribution to the increased noise levels would meet or exceed the City's 65 dBA L_{dn} noise level standard at sensitive land uses. If the proposed project's contribution to an increase in noise levels is less than 5 dBA, the increase would be noticeable, but not significant if the noise levels remain within San Bernardino 65 dBA exterior noise limit at sensitive uses, while any increase in noise level above 5.0 dBA is considered perceptible and significant.

Table 4.9-7 Projected Noise Levels at Build-out

		Sound Level at 50 feet from Right-of-Way (dBA CNEL)					
Roadway Segment	*Land Use*	*Existing*	*Future without Project*	*Future with Project*	*Cumulative Increase*	*Project Increase*	*Project Impact (Y/N)*
Palm Avenue, n of Little League Drive	Residential	63.7	64.7	64.7	1.0	0.0	N
Palm Avenue, s of Little League Drive	Industrial	66.9	67.9	67.9	1.0	0.0	N
Palm Avenue, n of 215 NB Ramp	Industrial	67.0	68.0	68.1	1.0	0.1	N
Palm Avenue, s of I-215 NB Ramp	Industrial	64.9	66.8	66.9	1.9	0.1	N
Palm Avenue, n of I-215 SB Ramp	Industrial	65.0	66.8	66.9	1.8	0.1	N
Palm Avenue, s of I-215 SB Ramp	Industrial	62.0	65.3	65.5	3.3	0.2	N
Palm Avenue, n of Industrial Parkway	Industrial	62.4	65.5	65.7	3.1	0.2	N
Palm Avenue, s of Industrial Parkway	Industrial	58.5	63.8	63.8	5.3	0.0	N
Palm Avenue, n of Cajon Boulevard	Industrial	58.6	63.8	63.9	5.2	0.1	N
Palm Avenue, s of Cajon Boulevard	Industrial	55.8	62.4	62.4	6.6	0.0	N
Little League Drive, e of Palm Avenue	Residential	59.4	61.5	61.5	2.1	0.0	N
Kendall Drive, w of Palm Avenue (n of I-215)	Industrial	64.9	66.5	66.5	1.6	0.0	N
Kendall Drive, e of Palm Avenue (s of I-215)	Industrial	60.0	64.6	64.6	4.6	0.0	N
Industrial Parkway, e of Palm Avenue	Industrial	41.0	47.4	47.4	6.4	0.0	N
Industrial Parkway, w of Palm Avenue	Industrial	59.3	60.4	61.5	1.1	1.1	N
Cajon Boulevard, e of Palm Avenue	Industrial	57.2	62.0	62.1	4.8	0.1	N
Cajon Boulevard, w of Palm Avenue	Industrial	58.1	58.5	58.5	0.4	0.0	N

SOURCE: PBS&J 2007

For purposes of analysis, the average peak-hour traffic volumes were extrapolated from the project traffic study (Crain 2007) and input into the model to estimate existing and future traffic noise levels on roadway segments in the project vicinity where existing or reasonably foreseeable sensitive receptors are or would be located. Current roadway characteristics, such as the number of lanes, were determined from field observations, aerial photographs of the project vicinity, and the project traffic study. A heavy vehicle percentage of 2 percent was assumed on roadways that would carry heavy-duty vehicles. An at-grade source/receiver configuration was assumed for all studied roadway segments. The reduction in noise levels due to the atmosphere and hard ground surface (the drop-off rate) is 3 dB per doubling of distance. Traffic noise impacts were modeled comparing noise levels along surrounding roadway segments with and without project impacts:

- Existing traffic levels
- Traffic levels at build-out without the proposed project, but with other proposed developments in the surrounding area
- Traffic levels in the build-out year with the proposed project and other proposed developments

As shown in Table 4.9-7, future roadway noise levels range from 47.4 dBA CNEL along Industrial Parkway east of Palm Avenue to 68.1 dBA CNEL along Palm Avenue north of the north-bound I-215 ramp. The noise levels projected represent the worst-case peak hour noise levels; the predicted values do not take into account the effect of any noise barriers or topography that may affect noise levels. In addition, the modeling runs use the worst-case traffic volumes by considering the project development scenario that would produce the most traffic on the studied roadway segments. Noise modeling output files are attached in Appendix J (Noise Data).

While the cumulative increase in noise levels would be up 6.6 dBA, which would exceed the 5 dBA increase threshold established in this EIR, as shown in Table 4.9-7, the proposed project's contribution to the future noise levels would be no greater than 1.1 dBA along Industrial Parkway west of Palm Avenue. Further, the proposed project's contribution to roadway noise levels along Palm Avenue north of Little League Drive where residential land uses are located would not increase above the projected ambient noise levels without the proposed project. Therefore, increased traffic levels associated with the proposed project would not result in an increase of noise levels that would exceed the 3 dBA increase threshold for sensitive land uses, or the 5 dBA increase for nonsensitive land uses. This impact would be considered ***less than significant***.

4.9.4 Cumulative Impacts

A cumulative impact analysis is only provided for those thresholds that result in a less-than-significant or significant and unavoidable impact. A cumulative impact analysis is not provided for Effects Found Not to Be Significant, which result in no project-related impacts.

The geographic context for the analysis of cumulative noise impacts depends on the impact being analyzed. For construction impacts, only the immediate area around the project site would be included in the cumulative context. For operational/roadway related impacts, the context is build-out of the *City of San Bernardino General Plan*, including existing and future development of cumulative projects within the City of San Bernardino, as well as adjacent communities that would be potentially impacted. This cumulative impact analysis considers development of the proposed project, in conjunction with ambient growth as discussed in Section 4.11 (Transportation/Traffic), and other development within the vicinity of the proposed project in the City of San Bernardino and surrounding jurisdictions. Noise is by definition a localized phenomenon, and significantly reduces in magnitude as distance from the source increases. Consequently, only projects and growth due to occur in the San Bernardino area would be likely to contribute to cumulative noise impacts.

Threshold	Would the project result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Increases in noise at sensitive uses would not occur as a result of construction of the proposed project, along with other construction in the vicinity. As discussed in Impact 4.10-1, construction of the proposed project would not expose many nearby sensitive receptors to exterior noise levels above the 65 dBA CNEL noise standard identified in the San Bernardino Municipal Code. Other construction that may occur in the vicinity of the project site would contribute noise levels similar to those generated for the proposed project. Where this development adjoins the proposed project construction, the combined construction noise levels would have a cumulative effect on nearby sensitive uses. Noise is not strictly additive, and a doubling of noise sources would not cause a doubling of noise levels; however, cumulative construction noise levels could be in excess of 65 dBA CNEL at nearby sensitive receptors. While cumulative construction noise levels would potentially exceed the limits established by the San Bernardino Municipal Code; however, cumulative development projects would be required to comply with the limitations set forth in the San Bernardino Municipal Code, including the identified project requirements as applicable. Further, construction noise would not occur during recognized sleep hours, and the nearest sensitive receptors are located sufficient distance from the project site such that potential impacts would be reduced to less-than-significant levels. Therefore, the proposed project's contribution would not be cumulatively considerable and the cumulative impact of the project would also be ***less than significant***.

With regard to stationary sources, noise would be generated from sources in the proposed project and other projects in the vicinity of the project site. The major stationary source of noise that will be introduced into the project site vicinity would likely be HVAC equipment located on the rooftops of new developments. As discussed in Impact 4.10-2, this HVAC equipment generally produces noise levels of around 57 to 65 dBA CNEL at a distance of 50 feet. As discussed above, noise is not strictly additive; a doubling of noise sources does not create a doubling of noise levels. Because all rooftop equipment would be shielded, no source would generate maximum noise levels of greater than 50 dBA L_{eq} at 50 feet. Consequently, multiple units would have to be located within 50 feet of a receptor to achieve noise levels that would exceed the City standards. The development types associated with the proposed project and other nearby projects are not so dense that multiple stationary units would be so closely spaced, either on site or off site. Consequently, the cumulative effect of multiple HVAC units, and mechanical equipment would be less than significant and the contribution of the project would not be cumulatively considerable. This would be a ***less-than-significant*** impact.

Threshold	Would the project and the related projects expose people to or generate excessive groundborne vibration or groundborne noise levels?

As discussed in Impact 4.9-3, construction of the proposed project would produce temporary vibration impacts that would be less than significant. Cumulative development in the vicinity of the project site is not considered likely to result in the exposure of on-site or off-site receptors to excessive groundborne vibration, due to the localized nature of vibration impacts and the fact that all construction would not occur at the same time and at the same location. Only receptors located in close proximity to each

construction site would be potentially affected by proposed project and cumulative construction activities. However, for the combined vibration impact from the two projects to reach cumulatively significant levels, heavy construction activity from both projects would have to occur simultaneously within 25 feet of any receptor. Therefore, construction vibration from future development could not combine with construction vibration of the proposed project to result in a significant cumulative impact and the cumulative impact would be ***less than significant***.

Groundborne vibration could conceivably be generated by operation of the proposed and other projects in the project site vicinity. Because no substantial sources of groundborne vibration would be built as part of the proposed project, no significant vibration impacts would occur during operation of the proposed project. Consequently, there would be no cumulative operational groundborne vibration impacts to any on-site or off-site receptor. The cumulative impact is, therefore, ***less than significant***.

Threshold	Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Periodic and temporary noise levels would be generated by construction of the proposed project within the project site, along with other cumulative development in the vicinity. However, construction noise impacts are localized in nature and decrease substantially with distance; consequently, in order to achieve a substantial cumulative increase in construction noise levels, more than one source emitting high levels of construction noise would need to be in close proximity to a noise receptor. As discussed previously, the closest sensitive receptor to the project site is approximately 1,650 feet to the north of the proposed project. As such, construction activities from the proposed project and cumulative development would have to occur within approximately 400 feet from the noise sensitive receptor in order to impact noise sensitive receptors. Therefore, the cumulative temporary increases in ambient noise at off-site locations associated with construction activities of the proposed project would be considered ***less than significant***.

Threshold	Would the proposed project and the related projects could cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Substantial permanent increases in noise would occur primarily as a result of increased traffic on local roadways due to the proposed project and other projects within the study area. Cumulative traffic-generated noise impacts have been assessed based on the contribution of the proposed project to the future cumulative base traffic volumes in the project vicinity. The noise levels associated with existing traffic volumes near the surrounding sensitive noise receptors for cumulative base traffic volumes without the project, cumulative traffic volumes with the project, and the contribution of traffic noise generated by the proposed project are identified previously in Table 4.9-7.

As shown in Table 4.9-7, cumulative development without the proposed project would increase local noise levels by up to 6.6 dBA CNEL along Palm Avenue south of Cajon Boulevard. As such, the cumulative increase in ambient noise level of 6.6 dBA would be above the 5 dBA significance threshold for areas where a proposed projects noise levels remain below the City's noise standards for noise

sensitive land uses such as residential uses. However, and as also shown in Table 4.9-7, because the contribution of the proposed project to the future noise levels would be no greater than 1.1 dBA than future development without the proposed project, the cumulative contribution of the project to the future roadway noise level at the affected intersection would not exceed the incremental threshold established for this analysis, the contribution would not be cumulatively considerable. Therefore, the proposed project would result in a ***less-than-significant*** cumulative impact.

4.9.5 References

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