4.10 Noise

This section of the Draft Environmental Impact Report (Draft EIR) for the proposed Mitchell Ranch Center project describes the acoustical setting of the project area, analyzes the impacts of the proposed project related to noise, and provides mitigation measures to address these impacts where necessary. The analysis focuses on the anticipated addition of project-generated noise (e.g., truck circulation, loading docks, parking lot sweeping, drive-thru operations, trash/cardboard compacting and mechanical equipment) in all phases, including construction and operation of the project. During operation, many of the individual project features (e.g., HVAC, truck deliveries, baling, parking lot sweeping) would not generate noise at the same time. However, some project noise factors will be concurrent and will overlap not only with other project noise sources, but with ambient noise in the area. These factors are taken into consideration in the analysis. The analysis presented in this section is based on the Environmental Noise Assessment – Mitchell Ranch Center Project, dated September 15, 2009, by Bollard Acoustical Consultants, Inc. (BAC) (**Appendix 4.10-1**). The site plan has changed since this report was prepared; however, BAC has subsequently reviewed the revised site plan and has prepared a letter certifying that the changes have no effect on their findings or recommendations (see summary memorandum of December 4, 2009 in **Appendix 4.10-1**). Noise impacts were also evaluated using a review of the City of Ceres General Plan, Zoning Ordinance, and Mitchell Road Corridor Specific Plan policies.

Following publication of the Notice of Preparation/Initial Study (NOP/IS), a comment letter was received from James Vinyard addressing impacts related to noise generated by the proposed project. This comment letter indicates that noise from delivery trucks and vehicles on the project driveways on Don Pedro Road will produce noise impacts during the night-time hours. Additionally, that letter notes impacts related to increased traffic noise levels in the vicinity of the project, as well as noise impacts related to delivery truck idling and air brakes, roll-up doors on receiving areas, and backup warning alarms from lift vehicles and trucks. Traffic noise levels are addressed in Impacts 4.10.1 and 4.10.2, and on-site delivery truck issues and loading dock operations are addressed in Impacts 4.10.4 through 4.10.7.

A comment letter was also received from Sherri Jacobson addressing impacts related to noise generated by the proposed project. This letter states that the impact of the noise associated with a 24-hour store and noise resulting from diesel trucks entering on Don Pedro Road are significant to community members' quality of life. As noted above, delivery truck issues and loading dock operations are addressed in Impacts 4.10.4 through 4.10.7.

4.10.1 ENVIRONMENTAL SETTING

The proposed Mitchell Ranch Center project is located in the City of Ceres on the northwest corner of Mitchell Road and Service Road. The acoustical setting for the proposed project includes noise generated by traffic along Mitchell Road, Service Road, and other surrounding roadways. Additional traffic noise within the vicinity of the project is generated by the proximity of State Route 99 to the project site. Noise levels surrounding the site also include normal levels of noise generated by the existing residences and commercial land uses surrounding the project site.

Land uses surrounding the project site include residential apartments and single family homes, commercial development, churches, and vacant property. The nearest existing residences to the project site are located approximately 100 feet away. Surrounding land uses are recognized in **Figure 4.10.2**, and are more specifically referenced in the context of specific noise impacts (e.g., the nearest existing residences are located approximately 100 feet north and 140 feet west of truck pass by areas while trucks are on site). The reader should refer to particular noise impact

discussions for references to the location of, or distance from, noise sensitive uses relevant to that discussion.

The project site itself is uninhabited, although intermittent use of the site by transients has been documented since 2007. Noise generated on site includes the occasional operation of agricultural equipment. Additional noises may be generated from the use of the site for occasional, temporary, and unsanctioned occupancy by transient persons. On-site noises may also include noises generated by wildlife and other animals such as dogs. Noise levels generated by current on-site activities described above are generally not substantial sources of nuisance for surrounding residential uses and do not generally occur over extended periods of time.

Acoustical Terminology

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are designated as sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or Hertz (Hz). Definitions of acoustical terminology are shown in Appendix A of the Environmental Noise Assessment, which is included as **Appendix 4.10-1** of this Draft EIR.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness.

Figure 4.10-1 illustrates common noise levels associated with various sources. The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}). The L_{eq} is the foundation of the day/night average noise descriptor, L_{dn}, and shows very good correlation with community response to noise. The day/night average sound level (L_{dn}) is based on the average noise level over a 24-hour day, with a +10 decibel weighting applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based on the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment. For this reason, the City of Ceres utilizes performance standards for non-transportation noise sources. Specifically, performance standards in terms of instantaneous maximum levels (L_{max}) and hourly average levels (L_{eq}), are used to assess noise generated on the project site.

Other key terms used in this section include:

- Single-Event Level (SEL). A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-second time period.

- Community Noise Equivalent Level (CNEL). The 24-hour average noise level with noise occurring during evening hours (7–10 PM) weighted by a factor of 3 and nighttime hours weighted by a factor of 10 prior to averaging.

- L_{max}. The highest root-mean-square sound level measured over a given period of time.

- Sound barrier wall. Unless otherwise described in this section or in subsequent actions on this project, a sound barrier wall referred to in this section consists of a solid wall constructed of concrete masonry unit (CMU) block, or equivalent masonry material, at least 8 feet tall and 8 inches thick. The blocks have a surface density of at least 3 pounds per square foot and are fully grouted.

Existing Ambient Noise Environment

The ambient noise environment in the immediate project vicinity is defined primarily by noise from Mitchell Road and State Route 99 traffic, but existing traffic on Service Road and Don Pedro Road also contributes to local ambient noise conditions. To generally quantify existing ambient noise levels in the project vicinity, three continuous (24-hour) ambient noise surveys were conducted on April 26–27, 2008, at the three locations shown in **Figure 4.10-2**. The noise measurement sites were selected to represent the nearest potentially affected residential land uses surrounding the project site. The results of the continuous measurements are presented in **Table 4.10-1**. Detailed discussion of methodology and results are shown in Appendix B and C of the Environmental Noise Assessment, which is included as **Appendix 4.10-1** of this Draft EIR.

TABLE 4.10-1
AMBIENT NOISE MONITORING RESULTS – APRIL 26–27, 2008

Site	Address	L_{dn}	Average Measured Hourly Noise Levels, dB			
			Daytime (7 AM to 10 PM)		Nighttime (10 PM to 7 AM)	
			L_{eq}	L_{max}	L_{eq}	L_{max}
1	3613 Archcliffe Drive	59	57	65–84	51	62–71
2	2800 Don Pedro Road #47	61	59	64–85	53	54–70
3	3824 Mitchell Road	71	68	76–95	63	73–84

Source: BAC, 2009

The ambient noise survey results shown in **Table 4.10-1** indicate that existing noise conditions at the residential uses nearest to the project site are currently high, with daytime average hourly noise levels ranging from the upper 50s to upper 60s dB L_{eq} and daytime maximum noise levels ranging from 84 to 95 dB L_{max}. The measured maximum noise level of 95 dB at measurement site 3 is believed to be due to an anomalous source very near the microphone. Inspection of **Appendix 4.10-1** indicates that maximum noise levels measured at site 3 typically ranged from the mid 70s to the mid 80s.

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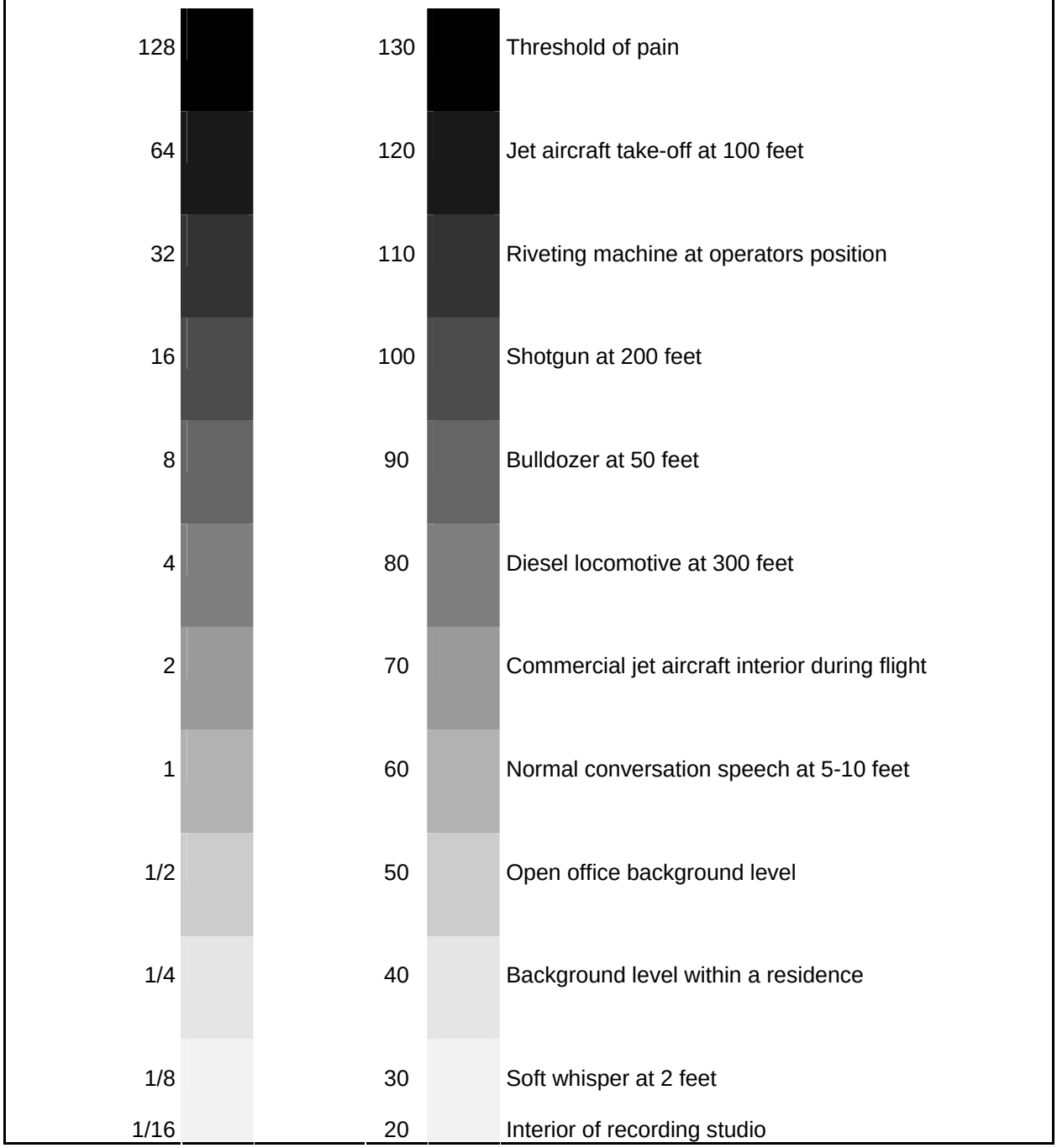

Source: Bollard Acoustical Consultants, 2008

Figure 4.10-1

A-Weighted Sound Levels of Common Noise Sources

PMC®

Figure 4.10-2

Ambient Noise Measurement Sites

PMC®

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Existing Traffic Noise Environment

To describe existing noise levels due to traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The model is based on the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To convert L_{eq} values predicted by the FHWA model into L_{dn} values, the hourly traffic volume input to the FHWA model is first adjusted to reflect the weighted day/night distribution of traffic. Based on analysis of the ambient noise monitoring results, it was determined that usage of a day/night traffic distribution of 83/17 percent would be appropriate for the computation of traffic noise levels in terms of L_{dn}.

Traffic volumes for existing conditions were obtained from the Draft Traffic Impact Study prepared for the project by Fehr & Peers Transportation Consultants (September 2008). Truck usage on the area roadways was estimated from field observations and file data. The data in that report is in the form of AM/PM peak-hour intersection turning movements, which was converted to average daily trips by Bollard Acoustical Consultants assuming 10 average daily trips (AM peak hour).

Table 4.10-2 shows the existing traffic noise levels in terms of L_{dn} at a reference distance of 50 feet from the centerlines of existing project-area roadways. These noise levels are considered to be the baseline condition. The table also includes the distances to existing traffic noise contours.

TABLE 4.10-2
EXISTING TRAFFIC NOISE LEVELS

Roadway	Section	L_{dn} (dB) @ 50 feet	Distance to Noise Contour (feet)		
			70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
Mitchell Road	North of Whitmore Avenue	71	57	123	266
	Whitmore Avenue to Roeding Road	71	55	119	256
	Roeding Road to Don Pedro Road	70	52	113	243
	Don Pedro Road to Service Road	70	53	115	247
	Service Road to Rohde Road	71	59	128	275
	Rohde Road to Northbound SR 99	71	57	123	264
Central Avenue	North of Service Road	66	28	61	131
	South of Service Road	68	38	81	175
Moffett Road	North of Service Road	53	4	8	17
	South of Service Road	57	7	15	31
Moore Road	North of Service Road	62	14	31	67
	South of Service Road	50	2	5	11
Whitmore Avenue	West of Mitchell Road	70	49	105	227
	East of Mitchell Road	69	41	89	193
Roeding Road	West of Mitchell Road	62	15	32	68

Roadway	Section	L_{dn} (dB) @ 50 feet	Distance to Noise Contour (feet)		
			70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
	East of Mitchell Road	63	17	37	80
Don Pedro Road	West of Mitchell Road	57	7	15	33
Service Road	West of Central Avenue	69	40	87	188
	Central Avenue to Moffett Road	68	37	81	174
	Moffett Road to El Camino Avenue	68	39	84	181
	El Camino Avenue to Mitchell Road	69	40	86	186
	Mitchell Road to Moore Road	66	27	57	124
	East of Moore Road	63	18	38	82

Source: BAC, 2009.

4.10.2 REGULATORY FRAMEWORK

LOCAL

City of Ceres General Plan

The City of Ceres General Plan was adopted in February 1997 and serves as the overall guiding policy document for land use, development, and environmental quality for the City. The General Plan Noise Element contains noise standards for transportation as well as non-transportation or "stationary" noise sources. The transportation noise standards, shown in **Table 4.10-3**, would apply to off-site traffic. The non-transportation criteria, shown in **Table 4.10-4**, would apply to on site-noise sources such as loading dock activities, on-site truck movements, mechanical equipment, parking lot sweeping, and drive-thru operations.

TABLE 4.10-3
CITY OF CERES GENERAL PLAN MAXIMUM ALLOWABLE NOISE EXPOSURE FROM TRANSPORTATION NOISE SOURCES

Land Use	Outdoor Activity Areas L_{dn}, dB	Interior Spaces	
		L_{dn}, dB	L_{eq}, dB
Residential	60*	45	--
Transient Lodging	60*	45	--
Churches, Meeting Halls	60*	--	40

Source: City of Ceres, 1997
** Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn} or less using practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.*

TABLE 4.10-4
CITY OF CERES GENERAL PLAN NOISE LEVEL PERFORMANCE STANDARDS
NEW PROJECTS AFFECTED BY OR INCLUDING NON-TRANSPORTATION PROJECTS

Noise Level Descriptor	Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)
Hourly Average Level – L_{eq}, dB	55	45
Maximum Level – L_{max}, dB	75	65

Source: City of Ceres, 1997
Note: Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.
Noise level standards are as measured at the property line of lands designated for noise-sensitive uses.

Table 4.10-5 provides an analysis of the proposed project's consistency with additional, applicable General Plan noise policies. While this Draft EIR analyzes the consistency of the proposed Mitchell Ranch Center project with the General Plan pursuant to the California Environmental Quality Act (CEQA) Guidelines Section 15125(d), the City will ultimately make the determination of the project's consistency with the General Plan. Environmental impacts associated with any potential inconsistency with the General Plan are addressed under the appropriate impact discussion sections of this Draft EIR.

TABLE 4.10-5
PROJECT CONSISTENCY WITH CITY OF CERES GENERAL PLAN POLICIES: NOISE

General Plan Policy	Consistency with General Plan	Analysis
Policy 1.B.11. The City shall require development project design to reflect and consider natural features, noise exposure of residents, visibility of structures, circulation, access, and the relationship of the project to surrounding uses. Residential densities, building intensities, and lot patterns will be determined by these and other factors. As a result, the maximum densities and intensities specified by General Plan designations or zoning for a given parcel of land may not be realized.	Yes	An Environmental Noise Assessment was conducted for the proposed project. This study includes recommended mitigation measures to ensure that project impacts to surrounding land uses are reduced to less than significant. The City shall require as a condition of approval that the project implement the proposed mitigation measures in consideration of the noise impacts to residents.
Policy 7.H.1. The City shall prohibit new development of noise-sensitive uses where the interior noise level due to non-transportation noise sources will exceed the noise level standards of Table 7-1 as measured at the property line of the new development, unless effective noise mitigation measures have been incorporated into the development design to achieve the standards specified in Table 7-1.	Yes	The proposed project does not include the construction of noise-sensitive uses.

General Plan Policy	Consistency with General Plan	Analysis
Policy 7.H.2. The City shall require that noise created by new proposed non-transportation sources be mitigated so as not to exceed the noise level standards of Table 7-1 as measured at the property line of lands designated for noise-sensitive uses.	Yes, with mitigation	Mitigation measures contained in this EIR mitigate non-transportation-generated noises from the proposed project and will reduce noise levels related to these sources to applicable standards. The City will require implementation of these mitigation measures as a condition of approval of the project. (General Plan Table 7-1 is included above as Table 4.10.4.)
Policy 7.H.4. Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 7-1 at existing or planned noise sensitive uses, the City shall require an acoustical analysis as part of the environmental review process so that noise mitigation may be included in the project design. The acoustical analysis shall meet the following requirements: a. It shall be the financial responsibility of the applicant. b. It shall be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics. c. It shall include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources. d. It shall include estimates of existing and projected cumulative (20 years) noise levels in terms of L, or CNEL and/or the standards of Table 7-1, and compare those levels to the adopted policies of the General Plan. e. It shall recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the noise section of the General Plan, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses. Where the noise source in question consists of intermittent single events, the report must address the effects of maximum noise levels in sleeping rooms in terms of possible sleep disturbance. f. It shall include estimates of noise exposure after the prescribed mitigation measures have been implemented. g. It shall describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.	Yes	An Environmental Noise Assessment was conducted for the proposed project. The assessment includes a discussion of impacts resulting from the proposed project and identifies applicable mitigation measures. The assessment includes estimations of noise levels which would result with the implementation of mitigation measures. This study is included as Appendix 4.10-1 of this Draft EIR. (General Plan Table 7-1 is included above as Table 4.10.4.)

General Plan Policy	Consistency with General Plan	Analysis
Policy 7.H.6. The City shall prohibit new development of noise-sensitive land uses in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in Table 7-2, unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels specified in Table 7-2.	Yes	The proposed project does not include the development of noise-sensitive land uses.
Policy 7.H.7: The noise created by new transportation noise sources shall be mitigated so as not to exceed the levels specified in Table 7-2 at outdoor activity areas or interior spaces of existing noise-sensitive land uses.	Yes	Off-site noise generated by project-related traffic is not anticipated to result in potentially significant impacts and no mitigation is required. Noise from truck traffic on-site is mitigated as necessary to comply with related standards as noted in Impact 4.10.4.
Policy 7.J.1. Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 7-2 or the performance standards of Table 7-1, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.	Yes	The proposed project does not include noise-sensitive land uses.
Policy 7.J.2. Where noise mitigation measures are required to achieve the standards of Tables 7-1 and 7-2, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.	Yes	The project site could be redesigned such that the primary noise-generating uses, such as loading bays and buildings, are located in the center of the project site, farthest away from adjacent residential uses. However, this type of redesign may not be feasible, and the use of noise walls and barriers is appropriate mitigation for this development. Alternative site designs are discussed in detail in Section 5.0, Project Alternatives, of this Draft EIR.

Mitchell Ranch Corridor Specific Plan

The proposed Mitchell Ranch Center project is located within the Mitchell Road Corridor Specific Plan, which establishes guidelines and regulations for the development of approximately 450 acres located along a 2.5-mile stretch of Mitchell Road. The Specific Plan, however, has no policies pertaining to noise impacts that are applicable to the proposed project.

City of Ceres Municipal Code

The City of Ceres Municipal Code includes the following provisions with respect to noise, which are applicable to this project:

> **9.36.010 Noise Prohibited**
>
> It is unlawful for any person to make, continue or cause to be made or continued any loud, unnecessary or unusual noise or any noise which either annoys, disturbs, injures or endangers the comfort, repose, health, peace or safety of others. (Ord. 75-439, 1975)

9.36.020 Unnecessary Noises

E. Construction or Repairing of Buildings: The erection (including excavating), demolition, alteration or repair of any building other than between the hours of seven o'clock (7:00) A.M. and eight o'clock (8:00) P.M., except that, by special permit issued by the Building Inspector or City Engineer, as the case may be, upon a determination that the public health and safety will not be impaired thereby, the erection, demolition, alteration or repair of any building or the excavation of streets and highways may be permitted within the hours of eight o'clock (8:00) P.M. and seven o'clock (7:00) A.M.

9.36.030 Exception to Sections 9.36.010 and 9.36.020

The provisions of Sections 9.36.010 and 9.36.020 shall not apply to any noise or situation within the scope of sections 23130 or 23109 of the Vehicle Code of the State. The collection of garbage is hereby exempted from the time limits contained in Sections 9.36.010 and 9.36.020 to the extent that it does not create a public nuisance. Garbage collection shall not start prior to five o'clock (5:00) A.M. (Ord. 90-752, 1990: Ord. 75-439, 1975)

18.38.060 Dangerous and Objectionable Elements

A. Noise: No noise shall be radiated from any use or facility that either:

1. Substantially exceeds the standards shown on the following page; or

2. In any other way constitutes a nuisance to adjacent or adjoining properties.

The standards referenced in 18.38.060 are provided in terms of L_{dn} for various land use categories in the form of a Land Use Compatibility Table. Because the City's non-transportation noise source standards (see **Table 4.10-4**) offer considerably more protection to existing noise-sensitive land uses in the project vicinity, those standards are used in this analysis for the assessment of noise impacts from on-site noise sources.

4.10.3 PROJECT IMPACT ANALYSIS

STANDARDS OF SIGNIFICANCE

Appendix G of the CEQA Guidelines serves as a preliminary guideline for determining the significance of impacts. The standards of significance utilized in the Environmental Noise Assessment prepared by Bollard Acoustical Consultants to determine whether the project would have a significant impact related to noise are listed below. Elaboration on the methodology used to apply these criteria for determination of a significant noise level increase is addressed after this list.

- 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. For off-site transportation noise sources (project traffic) and on-site non-transportation noise sources (loading docks, HVAC, etc.), the noise level standards of **Tables 4.10-3** and **4.10-4** [derived from the City's General Plan] are the standards of significance for this project, respectively. However, due to existing elevated ambient conditions measured during nighttime hours, the 45 dB L_{eq} nighttime standard of **Table 4.10-4** is increased to 50 dB L_{eq}. For the evaluation of sleep disturbance, an interior noise level of 65 dB SEL is applied with windows closed.

- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. This project does not propose any substantive sources of groundborne vibration, so this provision would not apply.

- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

- For noise level increases due to on-site noise sources, the **Table 4.10-1** data indicate that measured ambient noise levels generally exceeded the City's noise level guidelines for residential uses at sites 1, 2, and 3. As a result, the City's noise level standards, as shown in **Table 4.10-4,** are increased from the 45 dB L_{eq} nighttime standard to 50 dB L_{eq} between the hours of 10 PM to midnight, and between 4 AM to 7 AM, to reflect the higher ambient conditions during those hours.

- For off-site traffic noise level increases, the threshold of significance is either a 5, 3, or 1.5 dB increase over existing ambient noise levels, depending on pre-project ambient conditions. The rationale for the use of these thresholds is provided below.

- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Criteria for determination of a significant noise increase are discussed below.

- 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, exposure of people residing or working in the project area to excessive noise levels. Because no such airports were identified within 2 miles of the project site, this provision would not apply.

- For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels. Because no such private airstrips were identified near the project site, this provision would not apply.

METHODOLOGY

Criteria for Determination of a Significant Noise Level Increase

Off-Site Traffic Noise Level Increases

Based on studies of test subjects' reactions to changes in environmental noise levels for similar noise sources, the Federal Interagency Commission on Noise (FICON) developed the following recommendations for thresholds to be used in assessing the significance of project-related noise level increases for transportation noise sources. Where background noise levels without the project would be less than 60 dB L_{dn}, a 5 dB or greater noise level increase due to the proposed project is considered significant. Where background noise levels without the project would range from 60 to 65 dB L_{dn}, a 3 dB or greater noise level increase due to the project is considered significant. Finally, where background noise levels without the project would exceed 65 dB L_{dn}, a 1.5 dB or greater noise level increase due to the proposed project is considered significant. This graduated scale is based on findings that people in quieter noise environments would tolerate larger increases in noise levels without adverse effects, whereas people already exposed to elevated noise levels exhibited adverse reactions to noise for smaller increases.

Because the project area noise environment is already defined by noise from surface traffic, any additional increase in traffic noise levels which results from the proposed project would not affect the tonal nature of that existing noise environment. As a result, the use of more restrictive noise level thresholds to account for changes in the tonal character of the ambient noise environment are not warranted for the proposed Mitchell Ranch Center project. (See discussion below under "Reference Heavy Truck Passby Frequency Content" for further explanation of why noise frequencies related to traffic noise do not meet the definition of a "pure tone" and why impacts concerning tonal noise factors are not recognized in the context of project-related truck traffic.)

Noise Level Increases Due to On-Site Activities

For non-transportation noise sources, a 3 dB change in noise levels for similar sources is commonly considered to be the threshold of perception. However, if a project introduces a new noise source into a sensitive area, that source may be perceptible due to differing frequency content, even at noise levels at or below ambient conditions. As noted in **Table 4.10-1**, existing ambient noise conditions in the project vicinity are elevated due to the presence of major local roadways, including State Route 99. These sources result in nighttime average and maximum noise levels currently 5 dB or more over the City's nighttime 45 dB L_{eq} and 65 dB L_{max} noise standards shown in **Table 4.10-4**. As a result, the City's 45 dB L_{eq} nighttime noise level standard is increased to 50 dB to reflect these baseline ambient conditions.

Single Event and Sleep Disturbance Noise Impact

The City of Ceres Noise Element, like the noise element of most cities and counties, does not contain noise level standards for the effects of single-event noise on sleep. However, following a court case in Berkeley, California (*Berkeley Keep Jets Over the Bay Com. v. Board of Port Comrs. of Oakland, 2001*), there has been increased attention to the evaluation of single-event noise levels and their effects on sleep. Because the *Berkeley* case involved aircraft, and this project involves commercial activities, the situations are considerably different. Nonetheless, single-event noise levels are evaluated in this noise analysis.

Extensive studies have been conducted regarding the effects of single-event noise on sleep disturbance, but due to the wide variation in the reaction of test subjects to noises of various levels (some test subjects were awakened by indoor SEL values of 50 dB, whereas others slept through indoor SEL values exceeding 80 dB), no definitive consensus has been reached with respect to a universal criterion to apply.

The Federal Interagency Committee on Aviation Noise (FICAN) has provided estimates of the percentage of people expected to be awakened when exposed to specific SELs inside a home (FICAN, 1997). However, FICAN did not recommend a threshold of significance based on the percent of people awakened. According to the FICAN study, 10 percent of the population is estimated to be awakened when the SEL interior noise level is 81 dB. An estimated 5 to 10 percent of the population is affected when the SEL interior noise level is between 65 and 81 dB, and few sleep awakenings (less than 5 percent) are predicted if the interior SEL is less than 65 dB.

The threshold for sleep disturbance is not absolute because there is a high degree of variability from one person to another. Thus, the means of applying such research to land use decisions is not yet clear. As a result, no government agency has suggested what frequencies of awakenings are acceptable (California Division of Aeronautics, 2002). For these reasons, the Federal Interagency Committee on Noise and the California Airport and Land Use Planning Handbook continue to use CNEL as the primary tool for the purpose of land use compatibility

planning (California Division of Aeronautics, 2002). (Note that CNEL and L_{dn} are often used interchangeably, as there is only a subtle difference in noise level penalties between the two metrics during evening hours.) In fact, the L_{dn} represents the cumulative exposure to all single events, that is, the exposure of all SELs taken together, weighed to add penalties for nighttime occurrences, and averaged over a 24-hour period. Thus, it can be argued that the L_{dn}-based standards already account for the individual impacts associated with the SELs.

Because the *Berkeley* case drew concerns due to interior SEL values in excess of 65 dB, this analysis utilizes a similar threshold of 65 dB SEL within residences. Given this threshold, a chance of sleep disturbance would be less than 5 percent.

Impact Assessment Methodology

The major noise-producing components of the proposed project identified as potentially significant consist of off-site traffic, on-site truck movements and unloading activities at the loading dock areas identified on **Figure 4.10-3**, mechanical equipment (including cold food storage refrigeration units), drive-thru operations, parking lot sweeping activities, trash/cardboard compacting, and project construction. Each of these noise sources is evaluated separately below. As noted in the introduction to this section, many of the individual project features (e.g., HVAC, truck deliveries, baling, parking lot sweeping) would not typically generate noise at the same time. However, the analysis includes consideration of all project noise sources combined.

Project-Related Traffic

To assess noise impacts due to project-related traffic increases on the local roadway network, traffic noise levels were predicted at a representative distance (50 feet from roadway centerlines) for the Existing Plus Project and Future Plus Project conditions. The traffic noise levels were predicted using the same modeling methodology used for the existing scenario described in the Environmental Setting section earlier in this section. Traffic modeling assumptions for all project scenarios are included in **Appendix 4.10-1**.

Loading Dock Noise: Walmart Store

To determine typical loading dock noise levels associated with the proposed Walmart site, noise level measurement data was collected at the Citrus Heights Super Walmart (having a loading dock configuration comparable to the proposed project) during continuous noise level measurement surveys spanning August 15–18, 2008. These noise level measurements were conducted at a distance of 100 feet from the effective noise center of the truck unloading area, although passbys of trucks to and from the unloading area were within 50 feet of the noise measurement site. During the loading dock noise levels surveys, typical daytime and nighttime loading dock activities were monitored, including truck arrivals and departures, trucks backing into the docks (with beepers), trailer uncoupling, and refrigerated trailer units.

The proposed loading dock configuration for the Walmart store would locate the effective noise center of the loading docks approximately 185 feet from the closest residential uses to the north (see Figure 4 in BAC report included as **Appendix 4.10-1** of this Draft EIR) and approximately 250 feet from the apartments to the west of the project site.

The primary noise sources associated with the truck unloading areas located behind the proposed Walmart are the heavy trucks stopping (air brakes), backing into the loading docks (backup alarms), pulling out of the loading docks (engines accelerating), and short-term

refrigeration unit operation. Heavy-truck unloading will occur directly from the truck to the building, and sealed rubber gaskets will be provided at the truck docks to reduce noise from loading and unloading activities. Medium-duty truck unloading using handcarts will also contribute to truck unloading noise levels, and those operations are included in the reference noise levels cited above.

The reference noise level data cited above were extrapolated to the distance of the nearest residences (185–250 feet), with the results provided in **Table 4.10-6**. The **Table 4.10-6** data are based on a typical busy hour of loading dock activity and do not account for any shielding of loading dock activities which may result from future noise barriers or buildings. The **Table 4.10-6** data account for shielding provided by the wing-walls proposed along the northern side of each depressed loading bay and do include noise generated by unloading of medium-duty trucks using handcarts.

TABLE 4.10-6
PREDICTED NOISE LEVELS AT THE NEAREST RESIDENCES
DUE TO TRUCK UNLOADING ACTIVITIES BEHIND WALMART STORE

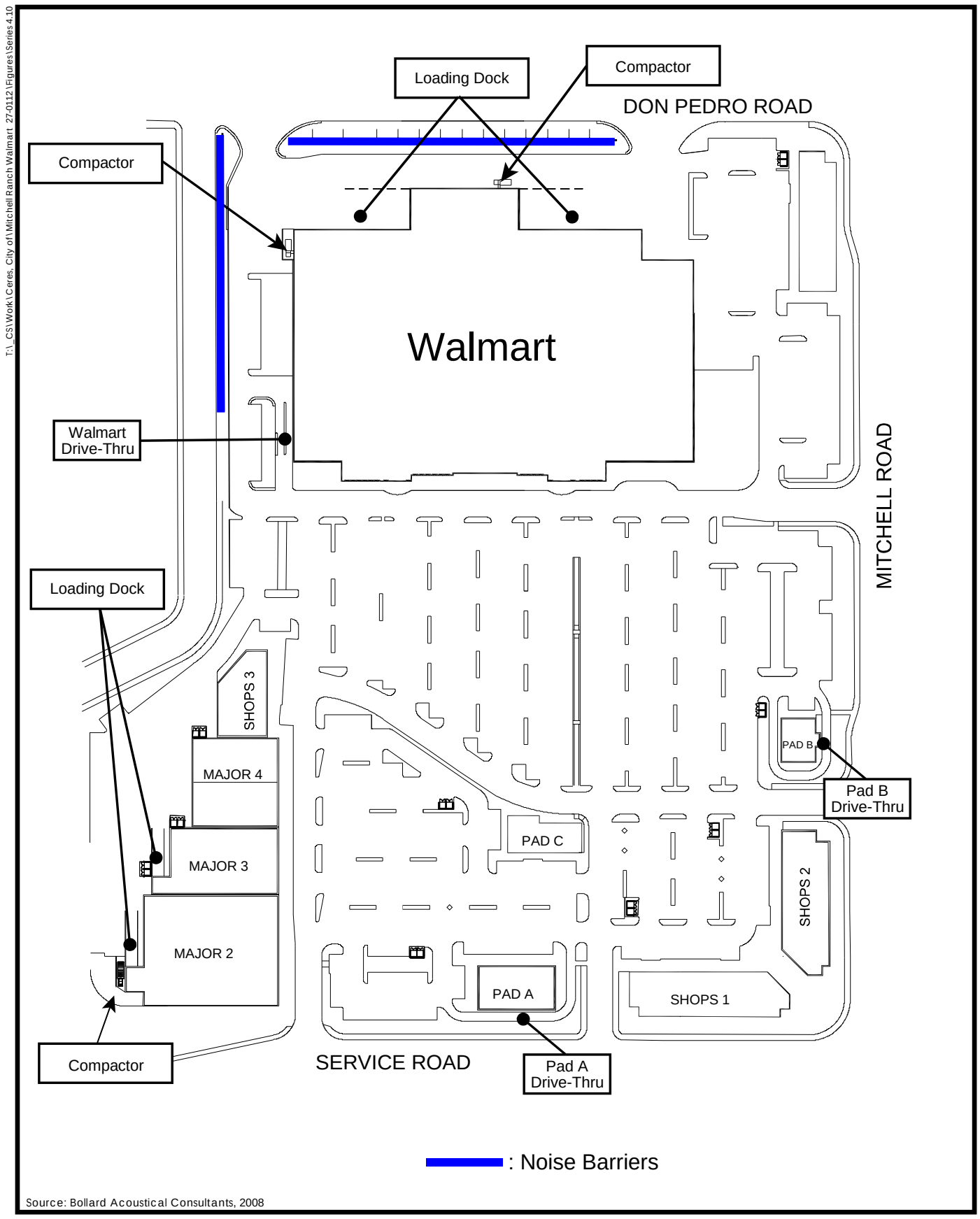
Location	Daytime L_{eq}, dB	Nighttime L_{eq}, dB	Day and Night L_{max}, dB
Residences to the North (185 feet)	51	46	70
Apartments to the West (250 feet)	49	44	67

Source: BAC, 2009

Loading Dock Noise: Majors 2, 3, and 4

To determine typical loading dock noise levels associated with the proposed Majors 2, 3, and 4 buildings, the assumptions and reference noise levels that were presented for the Citrus Heights Walmart were utilized. The proposed loading dock configuration for Majors 2, 3, and 4 would locate the effective noise center of the truck unloading area approximately 150 feet from the closest residences to the west, which is an abandoned home on a parcel that is commercially zoned (see Figure 4 in BAC report).

The reference noise level data were extrapolated to the distance of the nearest residence (150 feet), with the results provided in **Table 4.10-7**. The **Table 4.10-7** data are based on a typical busy hour of loading dock activity and do not account for any shielding of loading dock activities which may result from future noise barriers or buildings. The **Table 4.10-7** data account for noise generated by unloading of medium-duty trucks using handcarts.



Source: Bollard Acoustical Consultants, 2008

Figure 4.10-3
Noise Barrier Locations

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TABLE 4.10-7
PREDICTED NOISE LEVELS AT THE NEAREST RESIDENCES
DUE TO TRUCK UNLOADING ACTIVITIES BEHIND MAJORS 2–4

Location	Daytime L_{eq}, dB	Nighttime L_{eq}, dB	Day and Night L_{max}, dB
Residences to the West (150 feet)	52	47	71

Source: BAC, 2009

Rooftop and Other Mechanical Equipment

The heating, ventilation, and air conditioning (HVAC) systems for maintaining comfortable shopping temperatures within the Walmart Store and Majors stores will consist of packaged rooftop air conditioning systems. The units will be relatively evenly distributed across the roof of the buildings, typically starting about 30 feet in from the edges of the roof. These HVAC units, which typically stand about 4 to 5 feet tall, will be shielded from view from nearby noise-sensitive uses by the building parapets. Noise from such rooftop HVAC units has been measured at a reference distance of 100 feet from the building façade at another Walmart store (Red Bluff) to be 45 dB L_{eq}, including shielding by the building parapet.

To quantify the noise emissions from rooftop food cold storage refrigeration equipment, Bollard Acoustical Consultants, Inc. conducted noise level measurements at a similar Walmart in Reno, Nevada. At a distance of 50 feet from these units, an unshielded noise level of 66 dB L_{eq} was recorded. This figure is the basis for noise level calculations for the cold storage systems at the proposed Mitchell Ranch Walmart Store.

BAC file data for the types of trash compactors expected to be used at the project indicates that a steady-state reference level of approximately 64 dB (L_{eq} and L_{max}) can be expected at a distance of 50 feet during a typical compactor cycle.

On-site Truck Circulation Noise

Reference Heavy Truck Passby Noise Levels

To quantify the noise generation of slow-moving heavy truck passbys, such as those that will occur on the project site and near the residences closest to the project site access points, Bollard Acoustical Consultants conducted single-event passby noise tests at the West El Camino truck stop in Sacramento, California, on June 25, 2008, in the mid-afternoon and again on August 12, 2008, in the morning. The June measurements focused on heavy truck passbys without refrigeration units on their trailers, whereas the August measurements focused on trucks which had refrigeration units operating on their trailers. Both sets of measurements were conducted at a reference distance of 50 feet at a location suitable for isolation of individual passby events. As a result, the truck stop measurement site in Sacramento was an ideal location for the collection of this single-event data. During the truck passbys, Larson-Davis Laboratories Model 820 and 2900 sound level meters and frequency analyzers were used to quantify noise levels and event frequency content for each event.

BAC confirmed that the lowest noise level measured during each test interval (which represents the background noise at the time of each measurement) was an average of 12 dB below the highest noise generation of the truck passby event. This data indicates that background noise levels were sufficiently lower than the noise generation of the individual truck passby events so

as not to compromise the validity of the test data. The same principal holds for the measurement of SEL values. Because SEL represents the sum of all energy associated with a single event, it is time dependent. However, as with the addition of maximum noise levels, event energy for truck passby events which is 10 dB or more below the maximum noise level associated with the event does not contribute appreciably to the computed SEL. While measurement intervals must be of sufficient duration to ensure that the sound energy at the beginning and end of the event is at least 10 dB below the event maximum, for heavy truck passby noise measurements such as those described in Table 1 above, it not necessary to monitor the event beyond those limits. Nonetheless, the data collected by BAC provide an average of 12 dB separation between the event minimum and maximum, thereby ensuring that all significant energy of the truck passby was captured in the noise measurement sample.

The results of the heavy truck measurements indicated that maximum noise levels ranged from 69 to 77 dB L_{max}, with a mean of 74 dB L_{max}. Truck passby levels measured in terms of Single Event Levels (SEL) ranged from 77 to 85 dB, with a mean of 83 dB SEL.

Reference Heavy Truck Passby Frequency Content

The frequency data collected during the heavy truck passbys indicates that, although heavy truck noise emissions are of lower frequency content than automobiles, they do not contain pure tones. This finding is true regardless of whether or not they have refrigeration units on their trailers. The following explanation is provided in support of this conclusion.

For a noise source to contain a "pure tone," there must be a significantly higher A-weighted sound energy in a given frequency band than in the neighboring bands, thereby causing the noise source in question to "stand out" against other noise sources. The specific definition of a pure tone as contained in the State of California Model Community Noise Control Ordinance is as follows:

> Pure Tone: A pure tone shall exist if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the sound pressure levels of the two contiguous one-third octave bands by 5 dB for center frequencies of 500 Hz. and above, by 8 dB for center frequencies between 160 and 400 Hz, and by 15 dB for center frequencies less than or equal to 125 Hz.

The results of the heavy truck frequency testing for trailers with and without refrigeration units are provided in Appendix G-1 and G-2 contained in **Appendix 4.10-1**. The tests represent a total of 20 heavy truck passbys and indicate that there are no frequencies which come close to meeting the above definition of a pure tone.

Single Event Noise Levels within Nearest Residences during Heavy Truck Passages

With respect to potential sleep disturbance issues, slow-moving trucks arriving at the site on Don Pedro Road or Service Road passing within 50 feet of the nearest residential structures will generate a typical Single Event Level (SEL) of 83 dB. Assuming a minimum building façade noise level reduction of 25 dB with windows closed, noise levels inside the nearest residences would be approximately 58 dB SEL. The estimated 25 dB noise reduction of the existing residences in the area with windows in the closed position is based on testing of similar residential building façades affected by traffic noise by Bollard Acoustical Consultants staff in recent years.

If windows were in the open position, interior noise levels would be higher, but the 65 dB SEL values described in the *Berkeley* case were measured with windows closed. For consistency with

that case, and in keeping with industry convention, interior noise levels are analyzed for this project with windows in the closed position (mitigation for new housing projects affected by traffic noise in the City of Ceres would be based on analysis with windows closed).

Parking Lot Sweeping Noise

The proposed parking lot area would require the usage of a sweeping truck for routine cleaning. As a means of determining the noise levels associated with sweeper truck activities, Bollard Acoustical Consultants conducted field measurements of a typical sweeper vehicle during normal operation at a Home Depot store on Howe Avenue in Sacramento, California, on the morning of January 31, 2007. Sweeper truck noise levels were measured to be up to 75 dB L_{max} at a reference distance of 50 feet.

Drive-Thru Noise (Walmart, Pads A and B)

The Mitchell Ranch Center site plan proposes three drive-thru locations: Walmart, Pad A, and Pad B. To quantify the noise emissions of proposed drive-thru vehicle passages and speaker usage at the three locations, Bollard Acoustical Consultants, Inc. utilized noise level data previously collected for similar drive-thru operations. The reference noise level measurement data is summarized in **Table 4.10-8**. The noise level data reported in **Table 4.10-8** were utilized to predict drive-thru speaker and vehicle noise levels at the nearest noise-sensitive receivers.

The nearest noise-sensitive receiver to the Pad A drive-thru is a residence approximately 210 feet to the southeast. The nearest noise-sensitive receiver to the Pad B drive-thru is the residence within the St. Jude's Parish approximately 300 feet to the northeast. Finally, the nearest sensitive receivers to the proposed Walmart drive-thru are the apartments located approximately 200 feet to the northwest. **Table 4.10-8** shows the predicted noise levels associated with drive-thru lane usage at each receiver location.

TABLE 4.10-8
PREDICTED DRIVE-THRU VEHICLES/ SPEAKER NOISE LEVELS AT NEAREST RESIDENCES

Noise Source	Reference Noise Levels	Predicted Level at Existing Sensitive Receptors, dB*					
		Pad A 210′ to Residence		Pad B 300′ to Residence		Walmart 200′ to residence	
		L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}
Vehicles	70 dB L_{max} @ 5′ 65 dB L_{eq} @ 5′	38	33	34	29	38	33
Speaker	65 dB L_{max} @ 25′ 55 dB L_{eq} @25′	47	37	43	33	47	37

*Note: * The predicted levels account for attenuation of 6 dB per doubling of distance.*
Source: BAC, 2009

IMPACTS AND MITIGATION MEASURES

Increased Off-Site Traffic Noise

Impact 4.10.1 Implementation of the proposed project will generate additional traffic in the project area, which will lead to higher traffic noise levels on the local roadway network. This is considered a **less than significant** impact.

Results of the traffic noise analysis are summarized in **Table 4.10-9**. Detailed inputs and results are shown in Appendices D through F of the Environmental Noise Assessment, which is included as **Appendix 4.10-1** of this Draft EIR.

TABLE 4.10-9
PREDICTED EXISTING TRAFFIC NOISE LEVELS AT 50 FEET FROM ROADWAY CENTERLINES

Roadway	Section	L_{dn}, dB (Change, dB)		
		Existing	Existing + Project	Change
Mitchell Road	North of Whitmore Avenue	71	71	0
	Whitmore Avenue to Roeding Road	71	71	0
	Roeding Road to Don Pedro Road	70	71	1
	Don Pedro Road to Service Road	70	71	1
	Service Road to Rohde Road	71	72	1
	Rohde Road to Northbound SR 99	71	71	0
Central Avenue	North of Service Road	66	66	0
	South of Service Road	68	68	0
Moffett Road	North of Service Road	53	53	0
	South of Service Road	57	57	0
Moore Road	North of Service Road	62	62	0
	South of Service Road	50	50	0
Whitmore Avenue	West of Mitchell Road	70	70	0
	East of Mitchell Road	69	69	0
Roeding Road	West of Mitchell Road	62	62	0
	East of Mitchell Road	63	63	0
Don Pedro Road	West of Mitchell Road	57	60	3
Service Road	West of Central Avenue	69	69	0
	Central Avenue to Moffett Road	68	68	0
	Moffett Road to El Camino Avenue	68	69	1
	El Camino Avenue to Mitchell Road	69	69	0
	Mitchell Road to Moore Road	66	66	0
	East of Moore Road	63	63	0

Source: BAC, 2009

As shown in **Table 4.10-9**, the project-related noise level increases on individual roadway segments will range from 0 to 3 dB over existing levels. Because these increases are below the threshold of significance, based on the existing noise levels of each segment and the extent of the increase associated with each segment, this increase would not result in a substantial increase in noise levels. (Note: Concerning Don Pedro Road west of Mitchell Road, the 3 dB change is less than significant because the existing noise level is less than 60 dB; therefore, the increase would need to be 5 dB or greater to be considered significant.) This impact is considered **less than significant**.

Mitigation Measures

None required.

Single Event Noise Generated by Project Trucks on Public Roadways

Impact 4.10.2 Single-event noise levels generated by trucks associated with the proposed project on public roadways could cause sleep disturbance to nearby residents. This impact is **less than significant.**

For the evaluation of sleep disturbance, this EIR recognizes a significance factor of 65 dB SEL for an interior noise level with windows closed.

With respect to single-event noise levels and potential sleep disturbance issues, slow-moving trucks (i.e., less than 25 mph) arriving at the site on Don Pedro Road or Service Road, will generate typical Single Event Levels (SEL) of 83 dB at the exterior façade of residences at a distance within 50 feet. (See the discussions concerning Sleep Disturbance Criteria and Single Event Noise Levels within Nearest Residences during Heavy Truck Passages under Methodology, above, and in the Mitchell Ranch (Walmart) Project Environmental Noise Assessment (**Appendix 4.10-1** of this Draft EIR, including discussion of factors related to windows in open or closed positions.)

Assuming a minimum building façade noise level reduction of 25 dB with windows closed, noise levels inside the nearest residences would be approximately 58 dB SEL. The estimated 25 dB noise reduction in the existing residences in the area with windows in the closed position is based on testing of similar residential building façades affected by traffic noise by Bollard Acoustical Consultants in recent years.

The predicted interior SEL of 58 dB satisfies the target interior SEL criteria of 65 dB. It is further projected that the interior SEL of 58 dB would result in few related sleep awakenings (less than 5 percent of a typical population that has been estimated for SEL less than 65 DBA). Therefore, this impact concerning single-event noise levels and potential sleep disturbance as a result of project-related trucks on public roadways is considered **less than significant.**

Mitigation Measures

None required.

Construction-Generated Noise

Impact 4.10.3 Implementation of the proposed project would result in increased noise levels in the vicinity of the project site during construction of the project. This is considered a **less than significant** impact.

During the construction phase of the proposed project, noise from construction activities would add to the noise environment in the immediate project vicinity. Activities involved in construction would generate maximum noise levels, as indicated in **Table 4.10-10**, ranging from 85 to 90 dB at a distance of 50 feet.

TABLE 4.10-10
CONSTRUCTION EQUIPMENT NOISE

Type of Equipment	Maximum Level, dB at 50 feet
Bulldozer	90
Heavy Truck	88
Backhoe & Portable Concrete Plant	85
Pneumatic Tool	85

Source: Cunniff, 1977

The nearest existing residences to the project site are located approximately 100 feet away. At this distance, maximum noise levels would be expected to be approximately 80 to 85 dB L_{max}. Noise levels in this range would not represent a substantial short-term increase over ambient maximum noise levels, as the data indicates that measured daytime maximum noise levels currently range from 84 to 95 dB at the nearest residences (see **Table 4.10-1**). As outlined above under Methodology, Criteria for Determination of a Significant Noise Level Increase, a 3 dB increase in noise levels for non-transportation noise sources due to on-site activity is considered to be the threshold of perception. In addition, construction activities would be temporary in nature and are anticipated to occur only during normal daytime working hours. As a result, this impact is considered **less than significant.**

Mitigation Measures

None required.

On-Site Truck Traffic: Walmart

Impact 4.10.4 Implementation of the proposed project would result in on-site truck circulation noise from truck deliveries to the Walmart store. This is considered a **potentially significant** impact.

On-site truck circulation associated with the delivery of goods to the proposed Walmart Store during a typical busy hour is predicted to result in noise levels of 47 dB L_{eq}, 68 dB L_{max}, and 79 dB SEL at the nearest residences to the north of the site.

Based on information provided by the project applicant, daily truck activity at the proposed Walmart would reportedly consist of approximately 7 to 9 semi-trailer truck deliveries per day, approximately 2 to 3 of which would have refrigeration units, and 8 to 10 small vendor trucks. It was conservatively assumed that a busy hour would consist of the arrival and/or departure of 2 semi-trailer trucks and 3 medium-duty trucks during a given hour. Deliveries are anticipated to occur throughout the day, seven days per week, including up to five deliveries to the Walmart during the nighttime hours of 10 PM to 5 AM. The truck traffic noise analysis was based on these figures and on reference noise level measurements conducted at similar commercial truck loading docks.

According to the project site plans, the truck traffic for the Walmart Store will be routed to the rear (north end) of the Walmart store via Don Pedro Road. The on-site truck route would include trucks entering the project site through entrances on Don Pedro Road, traveling along the northern side of the Walmart store to access loading bays, and exiting through access along Don Pedro Road. The nearest existing residences are located approximately 100 feet north and 140 feet west of truck passby areas while the trucks are on site.

As noted above in the impact assessment methodology, heavy truck passbys en route to the loading dock areas are expected to be relatively brief and produce a typical Single Event Level (SEL) of approximately 78 dB at a distance of 100 feet. The typical L_{max} level due to a heavy truck passby is approximately 68 dB at a distance of 100 feet. Medium-duty truck passbys generate typical SEL and L_{max} values which are 5 dB lower than heavy trucks, or 73 and 65 dB, respectively, at a reference distance of 100 feet. Should a heavy and medium-duty truck pass within 100 feet of the nearest residences to the north at the same time, the combined SEL from both trucks would equal 79 dB SEL. These reference levels do not include noise from air brakes because this section focuses on noise from moving trucks on site. Air brake noise is included in the loading dock analysis (see Impact 4.10.6), as trucks are stopping and starting at those locations.

The predicted noise levels associated with a typical busy hour of on-site truck circulation on the Walmart project site satisfy the City's daytime noise level standards of 55 dB L_{eq} and 70 dB L_{max} (**Table 4.10-4**) at the nearest residential uses to the proposed Walmart, but would exceed the City's nighttime standard of 65 dB L_{max}. The predicted exterior noise level of 79 dB SEL at the nearest residential building façades during heavy truck passages on site would be reduced to 54 dB SEL within residences with windows closed, which would satisfy the project's 65 dB sleep disturbance criterion.

As noted previously, ambient conditions in the project vicinity are currently elevated. **Table 4.10-1** data indicate that measured ambient noise levels generally exceeded the City's noise level guidelines for residential uses at the ambient noise measurement sites. As a result of the measured elevated ambient conditions, the City's 45 dB L_{eq} nighttime standard is increased to 50 dB L_{eq} during nighttime hours. Despite this increased nighttime noise limit, on-site circulation could still exceed the City's nighttime average noise level standard, and this impact is considered **potentially significant** and is subject to mitigation.

Mitigation Measures

MM 4.10.4 The following requirements shall be applied to the project:

Solid noise barriers, as indicated in **Figure 4.10-3,** shall be constructed behind the Walmart loading dock area between the two site accesses to Don Pedro Road, and also along the western site boundary to provide shielding to the existing apartment buildings to the west. The barriers shall be 8 feet in height (except where a reduction in height is required for sight distance within clear vision triangles), and shall be constructed of concrete masonry unit (CMU) block with at least three lbs./square foot surface density. Blocks shall be fully grouted. This measure is predicted to reduce noise from Walmart-generated on-site truck circulation by at least 5dB, thereby reducing noise levels to 42 dB L_{eq} and 63 dB L_{max} at the nearest residences.

Timing/Implementation: *Mitigation shall be completed prior to issuance of a certificate of occupancy for Major 1.*

Enforcement/Monitoring: *City of Ceres Development Services Department – Planning Division*

The locations of the proposed sound barrier walls are illustrated in **Figure 4.10-3**. Implementation of mitigation measure **MM 4.10.4** will ensure that impacts associated with Walmart-generated on-site truck circulation are minimized to reduce conflicts with surrounding residential uses. This impact is reduced to a **less than significant** level.

On-Site Truck Traffic: Majors 2, 3, and 4

Impact 4.10.5 Implementation of the proposed project would result in on-site truck circulation noise from the delivery of goods to Majors 2, 3, and 4 stores. This is considered a **less than significant impact**.

On-site truck circulation associated with the delivery of goods to the Majors 2, 3, and 4 stores will result in noise levels of 44 dB L_{eq} and 64 dB L_{max} at the nearest residences to the west of the site.

Based on information provided by the project applicant, truck activity at the proposed Majors 2, 3, and 4 buildings would conservatively consist of approximately 10 truck deliveries per day. About half of the deliveries will be by semi-trailer. It was conservatively assumed that a maximum of 2 semi-trailer truck and 2 medium-duty truck deliveries would occur at these sites during a given hour. The truck traffic noise analysis was based on these figures and on reference noise level measurements described in the impact assessment methodology.

According to the project site plans, the truck traffic for the Major 2, 3, and 4 stores will be routed to the rear (west side) of the Major 2, 3, and 4 stores via Service Road (see BAC noise study report Figure 5). The nearest existing residences are located approximately 150 feet west of the truck circulation area for Majors 2, 3, and 4.

The predicted noise levels associated with a typical busy hour of on-site truck circulation at the Majors 2, 3, and 4 truck unloading areas will satisfy the City's daytime noise level standards (**Table 4.10-4**) and adjusted nighttime standards. As a result, this impact is considered **less than significant.**

Mitigation Measures

None required.

Loading Dock Operations: Walmart

Impact 4.10.6 Implementation of the proposed project would result in increased noises due to the delivery of goods to the Walmart Store. This is considered a **potentially significant** impact.

Unshielded loading dock activities associated with the delivery of goods to Major 1 (i.e., the proposed Walmart Store) will result in noise levels of 55 dB L_{eq} and 75 dB L_{max} at the nearest residences to the north of the site during daytime hours, and 50 dB L_{eq} and 75 dB L_{max} during nighttime hours. (Note: On-site delivery truck traffic impacts, including potential related single event level (SEL) impacts, have been addressed under Impact 4.10.4.)

The primary noise sources associated with the loading dock areas located behind the proposed Walmart store (at the positions shown on **Figure 4.10-3**) are the heavy trucks stopping (air

brakes), backing into the loading docks (backup alarms), pulling out of the loading docks (engines accelerating), and short-term refrigeration unit operation. Heavy truck unloading will occur directly from the truck to the building, and sealed rubber gaskets will be provided at the truck docks to reduce noise from loading and unloading activities.

The proposed loading dock configuration for the Walmart store would locate the nearest loading docks approximately 185 feet from the closest residential uses (single-family residences just north of the project site and 250 feet from the apartments to the west of the project site). As stated previously, measured daytime loading dock area noise exposure at the similar Walmart in Citrus Heights was approximately 55 dB L_{eq} and 75 dB L_{max} at a distance of 100 feet. During nighttime hours, average noise levels were measured to be 5 dB lower. (See **Figure 4.10-4**, Major Noise Source Locations)

The predicted average noise levels associated with a typical busy hour of loading dock activity at the Walmart loading dock area satisfy the City's daytime noise level standard (**Table 4.10-4**), but would exceed the City's nighttime standard. As a result, this impact is considered **potentially significant**.

Implementation of mitigation measure **MM 4.10.4**, described above to mitigate noise as a result of on-site truck traffic, requires construction of solid noise barriers behind the Walmart loading dock area between the two site accesses to Don Pedro Road, and along the western site boundary as indicated in **Figure 4.10-3**. In addition to mitigating on-site truck traffic, this mitigation measure is predicted to reduce noise levels from loading dock activities by at least 5 dB at the nearest residences, thereby reducing noise levels to 41 dB L_{eq} and 65 dB L_{max} at the nearest residences during the most restrictive nighttime hours.

Implementation of mitigation measure **MM 4.10.4** will reduce loading dock noise to acceptable levels and, with that measure, impacts caused by loading dock operations is also reduced to a level of **less than significant.**

Mitigation Measures

None required.

Loading Dock Operations: Majors 2, 3, and 4

Impact 4.10.7 Implementation of the proposed project would result in increased noise levels at loading docks for Majors 2, 3, and 4 stores. This is considered a **potentially significant** impact.

Unshielded loading dock activity associated with the delivery of goods to the Majors 2, 3, and 4 stores will result in noise levels of 52 dB Leq and 47 dB L_{eq} at the nearest residence to the west of the site during daytime and nighttime hours, respectively. Unshielded maximum noise levels associated with loading dock operations at Majors 2, 3, and 4 are predicted to be approximately 71 dB L_{max}.

The predicted noise levels associated with a typical busy hour of loading dock activities at the Majors 2, 3, and 4 truck unloading areas will satisfy the City's daytime noise level standards (**Table 4.10-4**), but would exceed the City's nighttime standards. This impact is **potentially significant,** as long as the adjacent parcel is considered residential. Under the scenario of continued residential use, two optional mitigation measures are presented that will reduce the impact on nighttime standards to less than significant.

Although the use of the parcel to the west of this area has a history of residential use, it is noted that the parcel is zoned R-C, Regional Commercial, District, and that its probable future use will be commercial. The parcel also is in an alignment that could be used to extend the potential future road south from Don Pedro Road on the west side of the proposed shopping center. Therefore, the historic use of that parcel as a residence may not continue and, if the use is determined to be changed prior to the time that the impact from the proposed project to a "residence" would otherwise need to be mitigated, the City could determine that the potential impact is resolved and would not need to require mitigation as otherwise presented in options MM 4.10.7a or MM 4.10.7b below. Therefore, expressed as optional mitigation measure MM 4.10.7c, is a provision whereby the City could determine that the potential significance of the impact is resolved by a change in use of the adjacent parcel and further mitigation is not necessary.

Mitigation Measures

MM 4.10.7a The following requirements shall be applied to the project:

A solid noise barrier shall be constructed between the truck unloading areas of Majors 2, 3 and 4 and the nearest residence to the west. The barrier shall be 8 feet in height (except where a reduction in height will be required for sight distance within clear vision triangles), and shall be constructed of concrete masonry unit (CMU) block with at least three lbs/square foot surface density. Blocks shall be fully grouted. This measure is predicted to reduce noise from Majors 2, 3 and 4 unloading activities by at least 6 dB, thereby reducing noise levels to 40 dB L_{eq} and 65 dB L_{max} at the nearest residences during nighttime unloading activities.

Timing/Implementation: *Mitigation shall be completed prior to issuance of a certificate of occupancy for Majors 2, 3 & 4.*

Enforcement/Monitoring: *City of Ceres Development Services Department -– Planning Division*

OR

MM 4.10.7b The following requirements shall be applied to the project:

Loading and unloading activities behind Majors 2, 3, and 4 shall be limited to daytime hours (7 am – 10 pm).

Timing/Implementation: *Mitigation shall be implemented throughout the life of the project by Majors 2, 3, and 4 occupants.*

Enforcement/Monitoring: *City of Ceres Code Public Safety Department – Code Enforcement Division*

OR

MM 4.10.7c If the City determines that the parcel has ceased to be considered by the City as having a noise sensitive use prior to implementation of either MM

4.10.7a or 4.10.7b, the City may consider the impact to have been reduced to a level that is less than significant and waive both of those mitigation options.

Timing/Implementation: *The determination may be made by the City prior a certificate of occupancy for Majors 2, 3 & 4.*

Enforcement/Monitoring: *City of Ceres Development Services Department – Planning Division*

Implementation of either mitigation measure **MM 4.10.7a, MM 4.10.7b, or MM 4.10.7c** will result in this impact being reduced to a level of **less than significant.**

Rooftop Mechanical Equipment Noise: Walmart

Impact 4.10.8 Implementation of the proposed project would result in increased noise levels due to the operation of rooftop mechanical equipment on the Walmart store. This is considered a **less than significant** impact.

Rooftop mechanical equipment at the proposed Walmart store will result in noise levels of approximately 46 dB L_{eq} at the nearest residences to the north and west of the site.

The heating, ventilation, and air conditioning (HVAC) system for maintaining comfortable shopping temperatures within the Walmart store will consist of packaged rooftop air conditioning systems. The units will be relatively evenly distributed across the roof of the building, starting about 30 feet in from the edges of the roof. These HVAC units, which typically stand about 4 to 5 feet tall, would be shielded from view of nearby noise-sensitive uses by the building parapet. Such rooftop HVAC units typically generate noise levels of approximately 50 dB L_{eq} at a reference distance of 100 feet from the building, not including shielding by the aforementioned parapet. After consideration of shielding, those levels would be reduced to approximately 45 dB L_{eq}. (Similar rooftop HVAC units were measured by Bollard Acoustical Consultants at an existing Walmart store (Red Bluff) and found to be 45 dB L_{eq} at a reference distance of 100 feet from the building, including shielding by the building.)

The food cold storage refrigeration equipment will also be located on the roof and will be situated on the structure in an area at least 270 to 280 feet from the nearest residences. To quantify the noise emissions from food cold storage refrigeration equipment, Bollard Acoustical Consultants conducted noise level measurements at a similar Walmart in Reno, Nevada. At a distance of 50 feet from these units, an unshielded noise level of 66 dB L_{eq} was recorded. This figure is the basis for noise level calculations for the cold storage systems.

The nearest residences to the north are located approximately 200 feet from the HVAC units and 270 feet from the food cold storage refrigeration equipment. (See **Figure 4.10-4**, Major Noise Source Locations) At these distances, the predicted noise levels from the combined HVAC and food cold storage equipment would be approximately 46 dB L_{eq}.

The nearest residences to the west are located approximately 230 feet from the HVAC units and 280 feet from the food cold storage refrigeration equipment. At this distance, the predicted noise levels from the combined HVAC and food cold storage equipment would be approximately 46 dB L_{eq} as well.

The levels are predicted to be similar at the residences to the north and west due to the similar distances between the food cold storage equipment and those residences, and because the food cold storage equipment is considerably louder than the rooftop heating and air conditioning equipment.

The predicted noise levels associated with combined HVAC and food cold storage equipment at the Walmart store satisfy the City's daytime and adjusted nighttime noise level standards (see **Table 4.10-4**). As a result, this impact is considered **less than significant**.

Mitigation Measures

None required.

Rooftop Mechanical Equipment Noise: Majors 2, 3, and 4

Impact 4.10.9 Implementation of the proposed project would result in increased noise levels due to the operation of rooftop mechanical equipment on the Majors 2, 3, and 4 stores. This is considered a **less than significant** impact.

Rooftop mechanical equipment at the Majors 2, 3, and 4 stores will result in noise levels of approximately 41 dB L_{eq} at the nearest residences to the west of those store locations.

The HVAC system for maintaining comfortable shopping temperatures within the Majors 2, 3, and 4 buildings will consist of packaged rooftop air conditioning systems. The units will be relatively evenly distributed across the roof of the buildings. As with the Walmart HVAC equipment, these HVAC units would be shielded from view by the project buildings and parapets. Such rooftop HVAC units typically generate noise levels of approximately 45 dB L_{eq} at a reference distance of 100 feet from the building, including shielding by the building. Unlike the Walmart store, the rooftop mechanical equipment for Majors 2, 3, and 4 will not include food cold storage refrigeration equipment.

The nearest residences to the west are located approximately 150 feet from the nearest HVAC units. At this distance, the predicted noise levels from the HVAC units would be approximately 41 dB L_{eq}.

The predicted noise level associated with HVAC equipment at the Majors 2, 3, and 4 stores satisfies the City's daytime and nighttime noise level standards (see **Table 4.10-4**). As a result, this impact is considered **less than significant.**

Mitigation Measures

None required.

Solid Waste and Recycling Equipment Noise

Impact 4.10.10 Implementation of the proposed project would result in increased noise levels due to the operation of on-site trash and cardboard compacting equipment. This is considered a **less than significant** impact.

According to the project site plans, the proposed Walmart store will have two trash compactors, and Major 2 will also include a compactor (see Figure 2 of the BAC noise study report). Based on BAC file data for similar compaction units, a steady-state reference noise level of approximately

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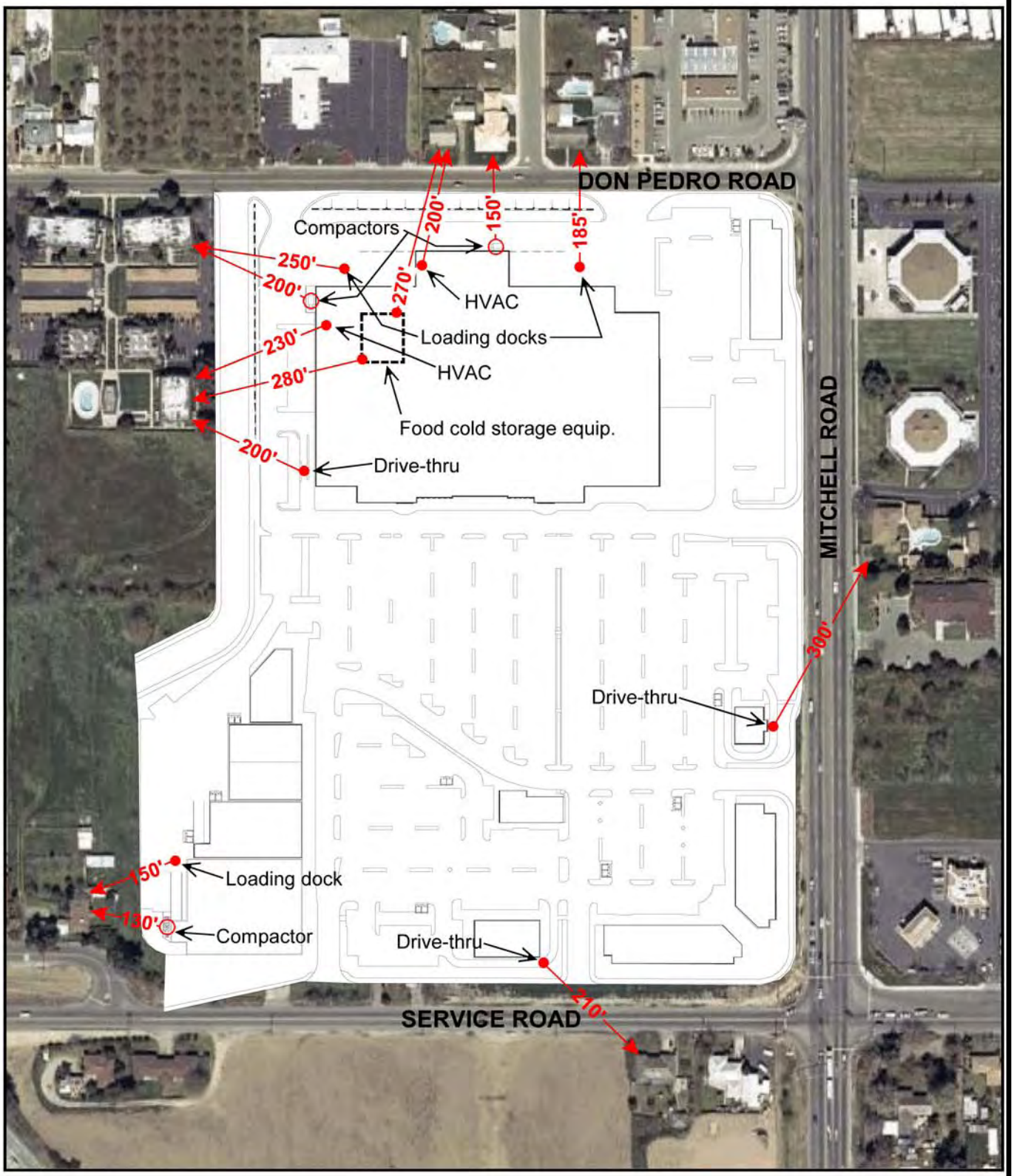

Source: Bollard Acoustical Consultants

0 150 300
Feet

N

Figure 4.10-4
Major Noise Source Locations

PMC®

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64 dB can be expected at a distance of 50 feet from the equipment during a typical compactor cycle. With an average cycle time of 60 seconds and an assumed four compaction operations per hour, the hourly average (L_{eq}) at the reference distance of 50 feet would be 52 dB L_{eq}.

The nearest residences are located approximately 130 to 200 feet from the proposed compactors. At those residences, unshielded compactor noise levels would range from 40 to 44 dB L_{eq}. These predicted noise levels satisfy the City's daytime and nighttime noise level standards, even without consideration of additional noise reduction which may result from compactor enclosures or property line noise barriers. As a result, this impact is considered **less than significant.**

Mitigation Measures

None required.

Parking Lot Sweeping Noise

Impact 4.10.11 Parking lot sweeping activities could result in unacceptable noise levels at the nearest residences to the north and west of the project site. This impact is **less than significant.**

The proposed parking lot area would require the usage of a sweeping truck for routine cleaning. As a means of determining the noise levels associated with sweeper truck activities, Bollard Acoustical Consultants conducted field measurements of a sweeper truck during normal operation at a Home Depot store on Howe Avenue in Sacramento, California, on the morning of January 31, 2007. Sweeper truck noise levels were measured to be up to 75 dB L_{max} at a reference distance of 50 feet.

The majority of the parking lot is on the south side of the Walmart store, as shown in **Figure 4.10-3**. With the sweeping equipment operating in the main parking area, the proposed Walmart building will completely shield sweeper truck noise levels at the residences to the north of the project site. In addition, the proposed Majors 2, 3, and 4 buildings will provide shielding of sweeper noise in the direction of the residences to the west. With the addition of the noise reduction provided by the 8-foot-tall noise barriers, where required for mitigation, and shielding by intervening project buildings, parking lot sweeping activities will result in noise levels of approximately 55 dB L_{max} or less at the nearest residences to the north and west of the site. When operating at more distant locations, sweeper noise would be much lower. At the nearest residence to the east, unshielded parking lot sweeper noise is predicted to be approximately 65 dB L_{max} or less.

The predicted noise level of 65 dB L_{max} or less at all nearby residences during sweeping operations satisfies the City's daytime and nighttime noise level standards (see **Table 4.10-4**). As a result, this impact is considered **less than significant.**

Mitigation Measures

None required.

Drive-Thru Operations: Walmart, Pads A and B

Impact 4.10.12 Drive-thru operations associated with Walmart and Pads A and B could result in unacceptable noise levels at the nearest residences to the south, west, and east of the site. This impact is **less than significant.**

The Mitchell Ranch Center site plan proposes three drive-thru locations: Walmart (on the west side of the store), Pad A, and Pad B, as illustrated in **Figure 4.10-3**. To quantify the noise emissions of proposed drive-thru vehicle passages and speaker usage at the three locations, Bollard Acoustical Consultants utilized noise level data previously collected for similar drive-thru operations. The reference noise level measurement data are summarized in **Table 4.10-11** and were utilized to predict drive-thru speaker and vehicle noise levels at the nearest noise-sensitive receivers.

The nearest noise-sensitive receivers to the proposed Walmart pharmacy drive-thru are apartments located approximately 200 feet to the northwest. The nearest noise-sensitive receivers to the Pad A drive-thru are single-family homes approximately 210 feet to the southeast. The nearest noise-sensitive receiver to the Pad B drive-thru is the residence within the St. Jude's Parish approximately 300 feet to the northeast. A sound attenuation rate of 6 dB per doubling of distance was used for drive-thru vehicle and speaker use. The predicted vehicle and drive-thru speaker noise levels for drive-thru operations at Walmart, Pad A, and Pad B are presented in **Table 4.10-11**. Refer to **Figure 4.10-3** for drive-thru and noise-sensitive receiver locations.

Because the average noise level descriptor, or L_{eq}, represents the average sound level over the period of one hour, average noise levels for this project would be considerably lower than the maximum noise levels, even during very busy drive-thru operations. More specifically, as shown in **Table 4.10-8**, average noise levels are estimated to be at least 5 and 10 dB lower than the predicted maximum levels for vehicles idling and speaker usage, respectively.

TABLE 4.10-11
PREDICTED DRIVE-THRU VEHICLES/ SPEAKER NOISE LEVELS AT THE NEAREST RESIDENCES

Noise Source	Reference Noise Level	Predicted Level at Existing Sensitive Receptors, dB*					
		Pad A 210' to Residence		Pad B 300' to Residence		Walmart 200' to Apartments	
		Maximum (Lmax)	Average (Leq)	Maximum (Lmax)	Average (Leq)	Maximum (Lmax)	Average (Leq)
Vehicles	70 dB L_{max} @ 5'	38	33	34	29	38	33
Speaker	65 dB L_{max} @ 25'	47	37	43	33	47	37

*Note: * The predicted levels account for attenuation of 6 dB per doubling of distance.*
Source: BAC, 2009

As shown in **Table 4.10-11**, drive-thru vehicles and speakers are predicted to generate average and maximum noise levels that are well below the City's daytime and nighttime noise level standards (**Table 4.10-4**). As a result, this impact is considered **less than significant.**

Mitigation Measures

None required.

4.10.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The future noise environment, including the cumulative contributions of noise from commercial and other development in the vicinity of the proposed project, will continue to be dominated by surface traffic noise, including noise from State Route 99 and Mitchell Road. Noise from projects in the area, such as the proposed Mitchell Ranch Center, will contribute to the noise environment, but such impacts at this level will occur in a highly localized manner. Evaluation of noise impacts above in this EIR section indicate that noise from on-site operations that can be expected to potentially impact noise-sensitive uses adjacent to the site, especially as mitigated by the outlined mitigation measures, will be quickly exceeded and rendered insignificant by the existing traffic-impacted noise environment. The ambient noise survey results shown in **Table 4.10-1** indicate that existing noise conditions near the site are currently high, with daytime average hourly noise levels ranging from the upper 50s to upper 60s dB L_{eq} and daytime maximum noise levels ranging from 84 to 95 dB L_{max}. (The measured maximum noise level of 95 dB at measurement site 3 is believed to be due to an anomalous source very near the microphone. Inspection of **Appendix 4.10-1** indicates that maximum noise levels measured at site 3 typically ranged from the mid 70s to the mid 80s.)

Off-site traffic noise is the only category of noise impact in which the contributions of noise related to the proposed project could meaningfully contribute to cumulative noise impacts. Therefore, traffic noise has been identified for analysis in the context of cumulative impacts.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Traffic Noise

Impact 4.10.13 Implementation of the proposed project, in combination with other reasonably foreseeable development in the area, would contribute to increased traffic noises in the vicinity of the proposed project. This contribution is considered **less than cumulatively considerable**.

The proposed project will generate additional traffic in the project area, which will lead to higher future traffic noise levels on the local roadway network. **Table 4.10-12** shows the projected future traffic noise levels for the local area roadways, including buildout of the area.

According to **Table 4.10-12**, the project-related noise level increase on individual roadway segments will range from 0 to 1 dB over future levels. Because this range of increases is below the thresholds of significance, the project's contribution to cumulative traffic noise levels is considered **less than cumulatively considerable**.

TABLE 4.10-12
PREDICTED FUTURE TRAFFIC NOISE LEVELS AT 50 FEET FROM ROADWAY CENTERLINES

Roadway	Section	L_{dn}, dB		
		Future	Future + Project	Change
Mitchell Road	North of Whitmore Avenue	71	71	0
	Whitmore Avenue to Roeding Road	71	71	0
Mitchell Road	Roeding Road to Don Pedro Road	70	71	1
	Don Pedro Road to Service Road	71	71	0
	Service Road to Rohde Road	72	72	0
	Rohde Road to Notthbound SR 99	71	72	1
Central Avenue	North of Service Road	69	69	0
	South of Service Road	69	69	0
Moffett Road	North of Service Road	56	56	0
	South of Service Road	66	66	0
Moore Road	North of Service Road	62	62	0
	South of Service Road	52	52	0
Whitmore Avenue	West of Mitchell Road	71	71	0
	East of Mitchell Road	71	71	0
Roeding Road	West of Mitchell Road	64	64	0
	East of Mitchell Road	65	65	0
Don Pedro Road	West of Mitchell Road	60	61	1
Service Road	West of Central Avenue	72	73	1
	Central Avenue to Moffett Road	72	72	0
	Moffett Road to El Camino Avenue	72	72	0
	El Camino Avenue to Mitchell Road	72	72	0
	Mitchell Road to Moore Road	71	72	1
	East of Moore Road	71	71	0

Source: BAC, 2009
L_{dn} = Day/Night Average Level.

Mitigation Measures

None required.

REFERENCES

Bollard Acoustical Consultants, Inc. (BAC). 2009. *Environmental Noise Assessment Mitchell Ranch Center Project.*

California Department of Transportation, Division of Aeronautics. 2002. *California Airport Land Use Planning Handbook*.

City of Ceres. 1997. *City of Ceres General Plan Policy Document*.

City of Ceres. 2007. Website and online Municipal Code. www.ci.ceres.ca (accessed September 2007).

Cunniff, Patrick F. 1997. *Environmental Noise Pollution.*

Federal Highway Administration. Highway Traffic Noise Prediction Model (FHWA-RD-77-108).

Federal Interagency Committee on Aviation Noise. 1997. *Effects of Aviation Noise on Awakenings from Sleep*.

Fehr & Peers Transportation Consultants. 2008. *Transportation Impact Analysis for Mitchell Ranch Center.*

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