
4.7 - Noise

4.7.1 - Introduction

This section describes the existing noise setting and potential onsite and surrounding area effects from implementation of the proposed Walmart. The analysis for the proposed Walmart includes construction and operational noise modeling performed by Michael Brandman Associates. The mitigation measures identified in this section to reduce noise impacts from the development of a Walmart are separated into two categories. The first category contains one mitigation measure that is the same as required with the development of the approved Wasco Center that includes the 158,000 square foot “Large Box Retail” use building on the project site. The second category contains a mitigation measure that is new for the proposed 170,000 square foot Walmart (i.e., an addition of 12,000 square feet to the approved structure and the change in use to a Walmart that includes a 24-hour operation) and not required with the approved Wasco Center. The following is a list of information that has been used in the preparation of this section.

- Noise Measurements Taken on Monday, November 29 and Tuesday, November 30, 2010. This information is located in Appendix I of this ~~Draft~~ [Final](#) SEIR.
- Photographs of Noise Measurement Sites. This information is located in Appendix I of this ~~Draft~~ [Final](#) SEIR.
- Traffic Noise Prediction (SoundPlan) Model - Existing Conditions. This information is located in Appendix I of this ~~Draft~~ [Final](#) SEIR.
- Modeled Construction Noise (Existing Plus Grading Equipment) at Nearby Receptors. This information is located in Appendix I of this ~~Draft~~ [Final](#) SEIR.
- Traffic Noise Prediction (SoundPlan) Model - Years 2013 and 2035 Without Walmart and With Walmart. This information is located in Appendix I of this ~~Draft~~ [Final](#) SEIR.
- Transportation and Stationary Exterior Noise Levels for Year 2013 Without Walmart and With Walmart. This information is located in Appendix I of this ~~Draft~~ [Final](#) SEIR.
- Transportation and Stationary Exterior Noise Levels for Year 2035 Without Walmart and With Walmart. This information is located in Appendix I of this ~~Draft~~ [Final](#) SEIR.
- California Department of Transportation (Caltrans). 2009. Technical Noise Supplement, November. This document is available for review at http://www.dot.ca.gov/hq/env/noise/pub/tens_complete.pdf
- California Department of Transportation (Caltrans). 2010. 2009 Annual Average Daily Truck Traffic on the California Highway System. December. This document is available for review at <http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2009all/docs/2009truckpublication.pdf>

- U.S. Department of Transportation. 2006. FHWA Roadway Construction Noise Model User's Guide. January. This document is available for review at <http://www.fhwa.dot.gov/environment/noise/rcnm/rcnm.pdf>
- City of Wasco. 2010. City of Wasco General Plan. This document is available for review at the City of Wasco Planning Department at 764 E Street, Wasco, CA 93280.
- City of Wasco. ND. City of Wasco Municipal Code. This document is available for review at the City of Wasco Planning Department at 764 E Street, Wasco, CA 93280.

4.7.2 - Environmental Setting

Acoustical Terminology

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally defined as unwanted sound. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of sound pressure, a ratio of the faintest sound detectable by a keen human ear, is called a decibel (dB).

A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound. The zero point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or fewer are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a 10-fold increase in acoustic energy, while 20 dB is 100 times more intense, and 30 dB is 1,000 times more intense. Each 10-dB increase in sound level is perceived as approximately a doubling of loudness.

Because sound or noise can vary in intensity by over 1 million times within the range of human hearing, a logarithmic loudness scale similar to the Richter scale used for earthquake magnitude is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, noise levels at maximum human sensitivity are factored more heavily into sound descriptions in a process called A weighting, written as dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Any further reference to decibels in this report written as dB should be understood to be A-weighted values.

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time-varying period (called L_{eq}), or, alternately, as a statistical description of the sound pressure level that is exceeded over some fraction of a given observation period. Finally,

because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, State law requires that, for planning purposes, an artificial dB increment be added to quiet-time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL).

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

- Variation in noise levels over time
- Influence of periodic individual loud events
- Community response to changes in the community noise environment

Several methods have been developed to measure sound over a period of time, including:

- Equivalent Sound Level (L_{eq})
- Community Noise Equivalent Level (CNEL)
- Day/Night Average Sound Level (L_{dn})

These methods are described and defined below.

L_{eq}

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time-varying period (called L_{eq}), or, alternately, as a statistical description of the sound pressure level that is exceeded over some fraction of a given observation period. The peak traffic hour L_{eq} is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses. The sound level exceeded over a specified time can be expressed as L_n (e.g., L_{90} , L_{50} , L_{10} , etc.). L_{50} equals the level exceeded 50 percent of the time, L_{10} equals the level exceeded 10 percent of the time, etc.

L_{dn}

A commonly used noise metric is the day/night average level or L_{dn} . The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period, called the L_{eq} . The L_{dn} is calculated by averaging the L_{eq} for each hour of the day at a given location after penalizing the sleeping hours (defined as 10:00 p.m. to 7:00 a.m.) by 10 dBA to account for the increased sensitivity of people to noises that occur at night.

CNEL

Another commonly used noise metric is the Community Noise Equivalent Level (CNEL). The CNEL has the same nighttime penalty as the L_{dn} , as well as another addition of 4.77 decibels to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these periods because, compared with daytime hours, there is a decrease in the ambient noise levels

during the evening and nighttime hours, which creates an increased sensitivity to sounds. For this reason, the sound seems louder in the evening and nighttime hours and is weighted accordingly. Due to the additional evening penalty, CNEL values are always higher than L_{dn} values; however, the difference is usually within 1 dB. Since CNEL and L_{dn} values are approximately the same, the City of Wasco General Plan Noise Element uses CNEL and L_{dn} noise descriptors interchangeably. However, since the CNEL is more conservative and was used in the approved Wasco Center MND, the CNEL standard has been used in this analysis to assess noise impacts onto sensitive land uses.

L_{max}

The maximum noise level recorded during a noise event is typically expressed as L_{max} . The L_{max} is typically measured by taking the maximum noise level recorded with the slow meter response, which is based on noise levels measured at one second intervals.

SEL

Another noise descriptor that is used primarily for the assessment of aircraft noise impacts is the Sound Exposure Level, which is also called the Single Event Level (SEL). The SEL descriptor represents the acoustic energy of a single event (e.g., an aircraft overflight) normalized to a 1-second event duration. This is useful for comparing the acoustical energy of different events involving different durations of the noise sources. The SEL is based on an integration of the noise during the period when the noise first rises within 10 dBA of its maximum value and last falls below 10 dBA of its maximum value. The SEL is often 10 or more dBA greater than the L_{max} , since the SEL logarithmically adds the L_{eq} for each second of the duration of the noise.

Noise Perception

As previously mentioned, people respond to changes in sound pressure, which are measured on a noise scale in a logarithmic manner. In general, a 3-dB change in sound pressure level is considered a just detectable difference in most situations. A 5-dB change is readily noticeable, and a 10-dB change is considered a doubling (or halving) of the subjective loudness. Note that a 3-dB increase or decrease in the average traffic noise level is realized by a doubling or halving of the traffic volume, or by about a 7-mile-per-hour increase or decrease in speed.

Noise Propagation

For each doubling of distance from a point noise source, the sound level will decrease by 6 dB. In other words, if a person is 100 feet from a machine and moves 200 feet from that source, sound levels will drop by approximately 6 dB. Moving 400 feet away, sound levels will drop approximately another 6 dB. For each doubling of distance from a line source, such as a roadway, noise levels are reduced 3 to 5 decibels, depending on the ground cover between the source and the receiver.

Noise Exposure

The California Noise Insulation Standards (Title 24, Chapter 1, Article 4 of the California Administrative Code) requires noise insulation in new hotels, motels, apartment houses, and

dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When structures that are proposed for construction are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship that are proposed for construction shall have an interior CNEL of 45 dB or less due to aircraft noise.

Normal noise attenuation within residential structures with closed windows is about 20 dB without any specialized structural attenuation (e.g., dual-paned windows). When dual-paned windows are used, which are typically required in order to meet the current Title 24 Building Standards, the exterior to interior attenuation is increased to 25 dB or higher. A noise level of 65 dB begins to interfere with one’s ability to carry on a normal conversation at reasonable separation without raising one’s voice. Table 4.7-1 summarizes typical noise sources, levels, and responses.

Table 4.7-1: Noise Levels and Human Response

Noise Source	Noise Level (dBA)	Response
Library	30	Very quiet
Refrigerator humming	40	Quiet
Quiet office	50	Quiet
Normal conversation	60	Intrusive
Vacuum cleaner	70	Telephone use difficult
Freight train at 50 feet	80	Interferes with conversation
Heavy-duty truck at 50 feet	90	Annoying
Jet takeoff at 2,000 feet	100	Very annoying; hearing damage at sustained exposure levels
Unmuffled motorcycle	110	Maximum vocal effect; physical discomfort
Jet takeoff at 200 feet	120	Regular exposure over one minute risks permanent hearing loss
Shotgun firing	130	Pain threshold
Carrier jet operation	140	Harmfully loud

Source: Melville C. Branch and R. Dale Beland, 1970.

Construction Noise Assumptions

The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston.

Table 4.7-2 provides a list of the construction equipment measured along with the associated measured noise emissions and measured percentage of typical equipment use per day. From this acquired data, the FHWA developed the Roadway Construction Noise Model, which may be used for the prediction of construction noise. For the purposes of this analysis, the Roadway Construction Noise Model will be used to calculate the construction equipment noise emissions.

Table 4.7-2: Construction Equipment Noise Emissions and Usage Factors

Equipment	Acoustical Use Factor (percent) ¹	Spec 721.560 L _{max} @ 50 feet (dBA, slow) ²	Actual Measured L _{max} @ 50 feet (dBA, slow) ³
Auger Drill Rig	20	85	84
Backhoe	40	80	78
Bar Bender	20	80	N/A
Compactor (ground)	20	80	83
Compressor (air)	40	80	78
Concrete Batch	15	83	N/A
Concrete Mixer Truck	40	85	79
Concrete Pump	20	82	81
Concrete Saw	20	90	90
Crane	16	85	81
Dozer	40	85	82
Dump Truck	40	84	76
Excavator	40	85	81
Flat Bed Truck	40	84	74
Front End Loader	40	80	79
Generator	50	82	81
Grader	40	85	N/A
Jackhammer	20	85	89
Paver	50	85	77
Pneumatic Tools	50	85	85
Pumps	50	77	81
Roller	20	85	80
Tractor	40	84	N/A

Table 4.7-2 (cont.): Construction Equipment Noise Emissions and Usage Factors

Equipment	Acoustical Use Factor (percent) ¹	Spec 721.560 L _{max} @ 50 feet (dBA, slow) ²	Actual Measured L _{max} @ 50 feet (dBA, slow) ³
Vibrating Hopper	50	85	87
Vibratory Concrete Mixer	20	80	80
Welder/Torch	40	73	74

Notes:
¹ Acoustical use factor is the percentage of time each piece of equipment is operational during a typical day.
² Spec 721.560 is the equipment noise level utilized by the Roadway Construction Noise Model program.
³ Actual Measured is the average noise level measured of each piece of equipment during the Central Artery/Tunnel project in Boston, Massachusetts primarily during the 1990s.
 Source: Federal Highway Administration, 2006.

Existing Noise Levels

To determine the existing noise level environment, three noise measurements were taken in the vicinity of the project site. Noise measurement locations were selected in the field with the intent of representative sampling of the existing noise environment. Exhibit 4.7-1 depicts the noise measurement locations.

Noise Measurement Results

The results of the noise level measurements are presented in Table 4.7-3, and were taken during a non-holiday weekday. The noise measurement locations were chosen based on the nearest existing or under construction residences to the project site. The measured sound pressure levels in dBA have been used to calculate the minimum and maximum L_{eq} averaged over 1-hour intervals, the entire measurement L_{max} and CNEL, which are shown in Table 4.7-3 along with the measured L_{eq} averaged over the entire measurement time. In addition, a graph of the calculated L_{eq} averaged over 1-hour intervals for the noise measurements are shown in Exhibit 4.7-2.

Table 4.7-3: Existing (Ambient) Noise Level Measurements¹

Site ²	Site Description	Start Time End Time	Average (dBA L _{eq})	Maximum (dBA L _{max})	Minimum 1-Hour Interval (dBA L _{eq} /Time)	Maximum 1-Hour Interval (dBA L _{eq} /Time)	Average (dBA CNEL)
A	Located north of the project site, approximately 30 feet north of the centerline for Gromer Avenue.	1:53 p.m. 6:53 a.m.	55.0	88.9	35.3 11:24 p.m.	61.2 5:31 p.m.	60.6

Table 4.7-3 (cont.): Existing (Ambient) Noise Level Measurements¹

Site ²	Site Description	Start Time End Time	Average (dBA L _{eq})	Maximum (dBA L _{max})	Minimum 1- Hour Interval (dBA L _{eq} /Time)	Maximum 1- Hour Interval (dBA L _{eq} /Time)	Average (dBA CNEL)
B	Located east of the project site in the last row of trees before the graded area for single-family homes.	2:17 p.m. 7:38 a.m.	50.6	71.8	43.3 2:30 a.m.	56.6 6:19 a.m.	59.0
C	Located southwest of the project site, approximately 80 feet south of the centerline for State Route 46.	4:36 p.m. 1:52 p.m.	65.7	86.3	60.6 3:13 a.m.	69.0 4:33 a.m.	71.8

Notes:
¹ Noise measurements taken on Monday, November 29 and Tuesday, November 30, 2010.
² Site location shown on Exhibit 4.7-1.
Source: Michael Brandman Associates, 2011.

The noise measurement results show that only Site C currently exceeds the City's exterior noise standards of 65 dBA CNEL for noise-sensitive residential areas. The noise measurement data printouts and photographs of the noise measurement sites are included in Appendix I.

Modeled Existing Noise Levels

Table 4.7-4 provides the SoundPlan-modeled noise levels at the façades of nearby sensitive receptors. The SoundPlan model was also used to produce a noise contour map showing the existing dBA CNEL in the project vicinity and is shown below in Exhibit 4.7-3. The SoundPlan Model printouts for the existing conditions are provided in Appendix I. Table 4.7-4 shows that only Receivers 8 and 9, which are near SR-46 currently exceeds the City's 65-dBA CNEL residential standard.



Source: DigitalGlobe June 17, 2009.

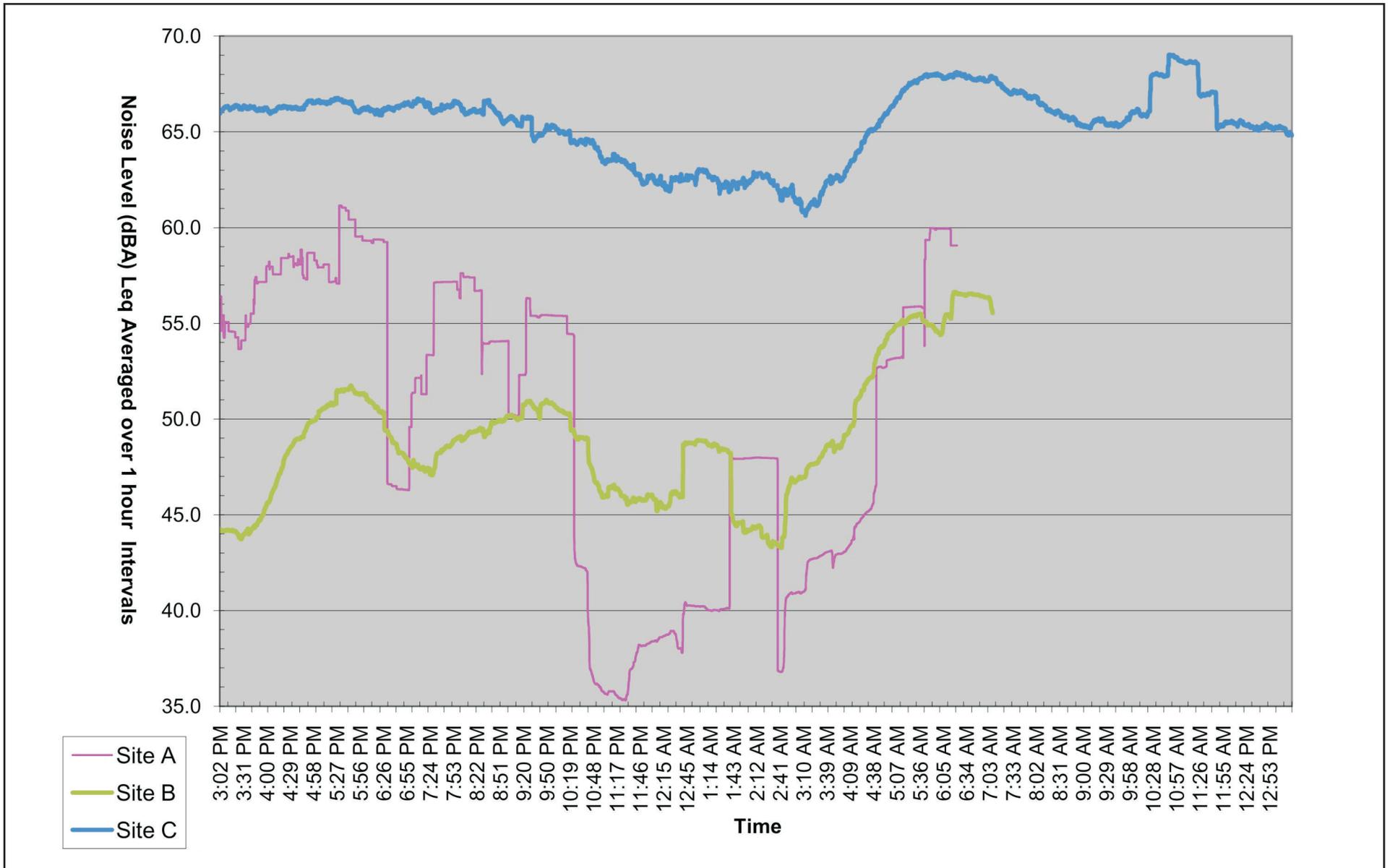


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Exhibit 4.7-1 Noise Measurement Locations

WASCO CENTER WALMART • CITY OF WASCO



Source: Extech Model 407780 Type 2 Integrating Sound Level Meters.

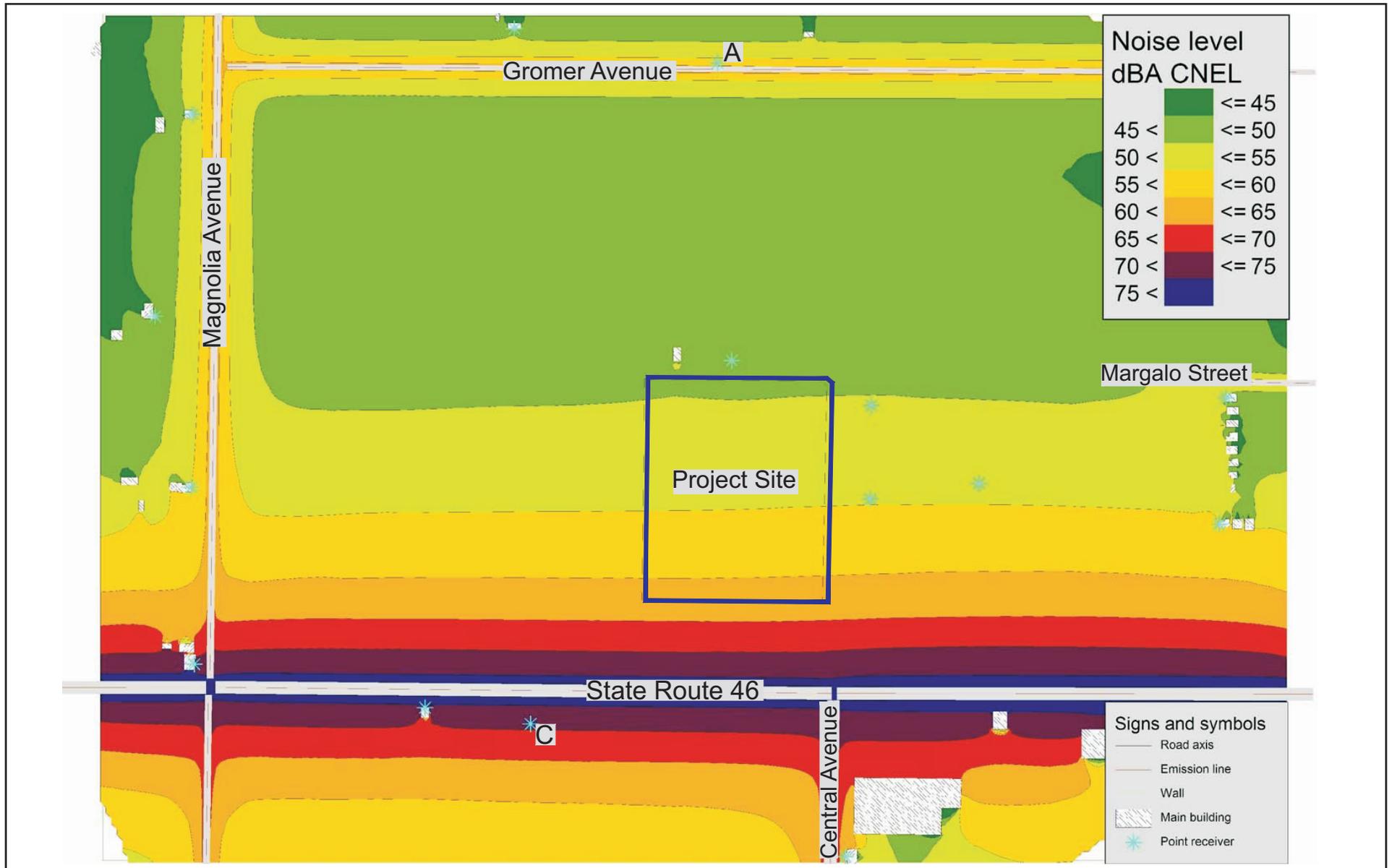


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Exhibit 4.7-2 Field Noise Measurements Graph

WASCO CENTER WALMART • CITY OF WASCO



Source: SoundPlan Version 7.0.



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Exhibit 4.7-3 Existing Noise Contour Map (dBA CNEL)

WASCO CENTER WALMART • CITY OF WASCO

Table 4.7-4: Existing Noise Levels at Nearby Homes

Receiver ¹	Description	CNEL ²	L _{eq} Day	L _{eq} Evening	L _{eq} Night
1	Single-family home to the north	47.7	42.2	38.2	41.5
2	Proposed residential to the north ³	48.8	42.6	39.1	42.7
3	Proposed residential to the east ⁴	54.9	48.8	45.4	48.8
4	Proposed residential to the east ⁴	59.7	53.7	50.5	53.6
5	Single-family home to the east	49.2	43.2	39.5	43.1
6	Single-family home to the east	54.1	47.9	44.4	48.0
7	Multi-family home to the south	62.0	57.2	53.4	55.6
8	Single-family home to the southwest	74.0	68.3	65.2	67.8
9	Single-family home to the southwest	69.4	63.7	60.6	63.2
10	Single-family home to the west	55.0	50.0	46.4	48.7
11	Single-family home to the west	47.6	42.0	38.2	41.4
12	Single-family home to the northwest	52.5	48.0	44.3	46.1

Notes:

¹ Site location shown on Exhibit 4.7-3.

² Noise level includes a 4.77-dBA penalty to account for the noise sensitive evening hours and a 10-dBA penalty to account for the noise-sensitive nighttime hours.

³ Located 80 feet north of the property line to account for a 60 foot right-of-way for Margalo Street and a 20 foot setback.

⁴ Located at nearest point of proposed Wasco Center multi-family residential structures and worst-case noise of either first or second floor.

Source: Michael Brandman Associates, 2011.

Modeled Existing Roadway Noise Contours

The existing roadway noise contours were calculated utilizing the FHWA Traffic Noise Prediction Model FHWA-ROAD-77-108. The distances to the 55, 60, 65, and 70 dBA CNEL noise contours were calculated, plus the noise level at 60 feet from the centerline was calculated and is representative of the nearest homes along the study area roadways. Table 4.7-5 shows the existing traffic noise contours.

Table 4.7-5: Existing Traffic Noise Contours

Roadway	Segment	CNEL at 60 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Scofield Avenue	North of State Route 46	55.8	RW	RW	RW	67
Scofield Avenue	South of State Route 46	59.9	RW	RW	59	127
Magnolia Avenue	North of State Route 46	46.8	RW	RW	RW	RW
Magnolia Avenue	South of State Route 46	50.2	RW	RW	RW	RW
Central Avenue	South of State Route 46	57.1	RW	RW	RW	82
Beckes Street	South of State Route 46	53.1	RW	RW	RW	45
Palm Avenue	North of State Route 46	58.1	RW	RW	RW	97
Palm Avenue	South of State Route 46	57.5	RW	RW	RW	88
Poplar Avenue	South of State Route 46	50.4	RW	RW	RW	29
Griffith Avenue	North of State Route 46	53.3	RW	RW	RW	47
Griffith Avenue	South of State Route 46	55.4	RW	RW	RW	64
F Street North	North of State Route 46	54.0	RW	RW	RW	52
State Route 43 South	South of State Route 46	60.5	RW	RW	65	139
State Route 43 North	North of State Route 46	62.8	RW	RW	92	198
J Street	South of State Route 46	61.8	RW	RW	79	170
State Route 46	West of Scofield Avenue	69.0	RW	111	239	514
State Route 46	West of Magnolia Avenue	63.4	RW	117	253	545
State Route 46	West of Central Avenue	63.6	56	120	259	559
State Route 46	East of Central Avenue	64.5	65	140	301	649
State Route 46	East of Palm Avenue	65.5	76	163	351	756
State Route 46	East of Broadway Street	65.4	74	159	342	736
State Route 46	East of State Route 43 South	64.4	63	137	295	635

Notes:
RW = Noise contour is located within right-of-way of roadway.
Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108; Michael Brandman Associates, 2011.

The calculated existing noise contours in Table 4.7-5 shows that currently at 60 feet from the roadway centerlines, the roadway segments of State Route 46; west of Scofield Avenue, east of Palm Avenue, and east of Broadway Street currently exceeds the City's 65 dBA CNEL residential noise standard. The noise levels from all analyzed roadway segments range from 46.8 to 69.0 dBA CNEL.

4.7.3 - Regulatory Setting

Federal

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Promulgating noise emission standards for interstate commerce;
- Assisting state and local abatement efforts; and
- Promoting noise education and research.

The Federal Office of Noise Abatement and Control was initially tasked with implementing the Noise Control Act. However, the Office of Noise Abatement and Control has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration prohibits exposure of workers to excessive sound levels. The United States Department of Transportation assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by FTA, while freeways that are part of the interstate highway system are regulated by FHWA. Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that “noise sensitive” uses are either prohibited from being sited adjacent to a highway or, alternately, that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation sources, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

State

Noise Standards

Established in 1973, the California Department of Health Services Office of Noise Control was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the “Land Use Compatibility for Community Noise Environments Matrix,” which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise, and is shown below in Exhibit 4.7-4.

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When structures that are proposed for construction are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the

California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship that are proposed for construction shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable.

Single-Event Noise Descriptors

Noise is rarely regulated by SEL descriptors. As previously discussed, the SEL descriptor represents the acoustic energy of a single event normalized to a one-second event duration, while L_{dn} and CNEL represent the weighted average of the intensity of noise over a 24-hour period, with adjustments for nighttime noise sensitivity. The City of Wasco General Plan does not establish SEL standards. The use of SEL descriptor in considering sleep disturbance is complicated by the high degree of variability that exists based on personal perception. For these reasons, the Federal Interagency Committee on Noise and the California Airport and Land Use Planning Handbook continue to use L_{dn} or CNEL as the primary tool for land use compatibility planning and do not establish SEL standards. Since the L_{dn} and CNEL represent 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—the L_{dn} - and CNEL-based standards already account for the individual impacts associated with SELs.

Local

City of Wasco

Since the state and federal government have preempted the setting of standards for noise levels that can be emitted by the transportation sources, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning. The applicable sections of the General Plan and Municipal code are provided below.

General Plan

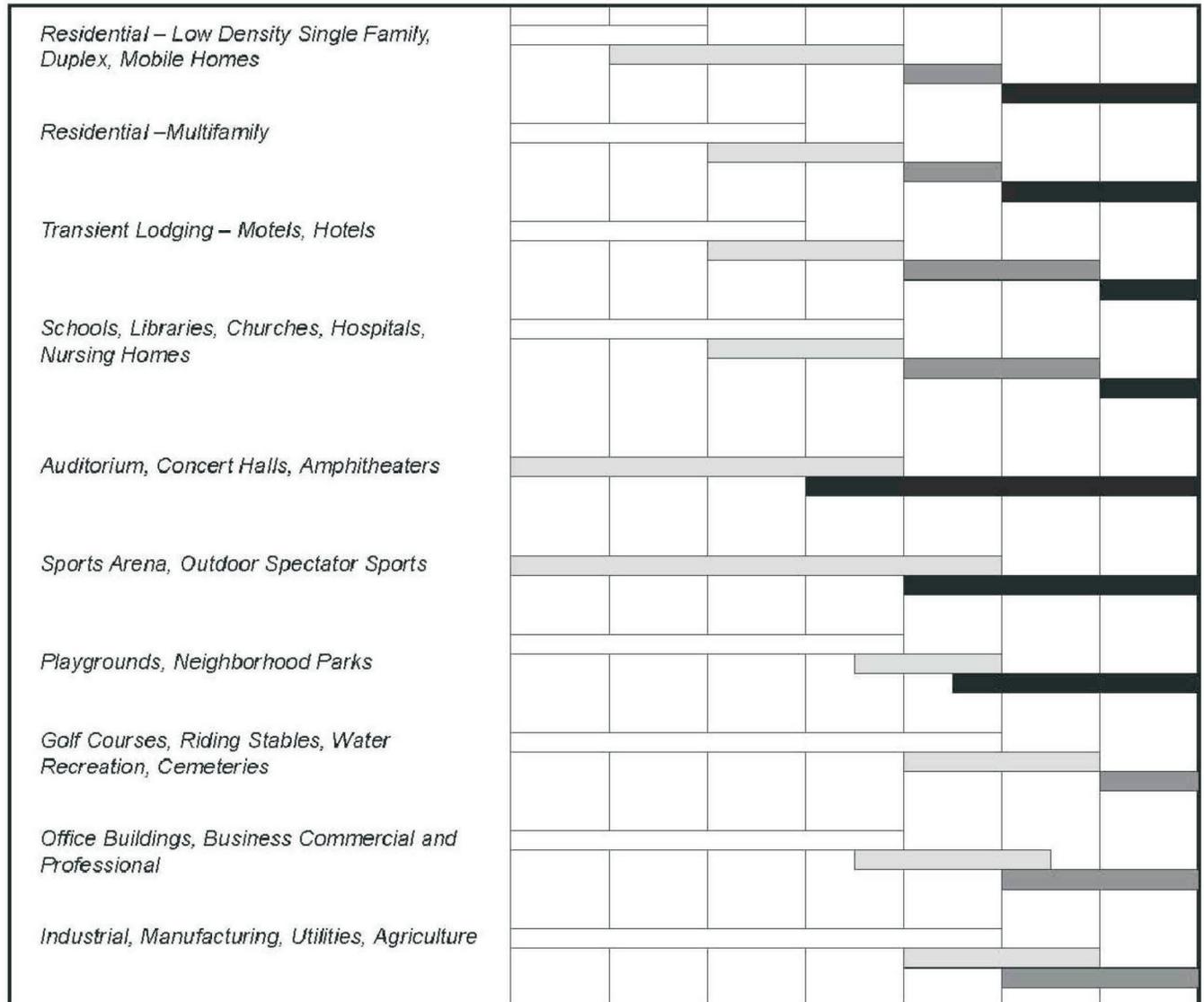
The General Plan establishes the following goals and policies that are relevant to noise associated with the proposed project:

- **Objective A** To protect the citizens of the City from harmful and annoying effects of exposure to excessive noise.
- **Objective C** To preserve the tranquility of residential areas by preventing noise producing uses from encroaching upon existing or planned noise-sensitive uses.

COMMUNITY NOISE EXPOSURE

L_{dn} or CNEL, dB

55 60 65 70 75 80



LEGEND:



NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.



NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and neede noise insulation features included in the design.



CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.



CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

Source: California Department of Health. *Guidelines for the Preparation and Content of Noise Elements of the General Plan*. November, 1990.

Source: California Department of Health, 1990.



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- **Objective E** To emphasize the reduction of noise impacts through careful site planning and project design, giving second preference to the use of noise barriers and/or structural features to buildings containing noise-sensitive land uses.

Policies/Standards

- P1. Areas shall be recognized as noise impacted if exposed to existing or projected future noise levels at the exterior of buildings which exceed 65 dB Ldn (or CNEL)
- P2. Noise sensitive land uses should be discouraged in noise impacted areas unless effective mitigation measures are incorporated into the specific design of such projects to reduce exterior noise levels to 65 dB Ldn (or CNEL) or less and 45 dB Ldn (or CNEL) or less within interior living spaces. Noise sensitive land uses includes hospitals, residences, schools, churches, and other uses of a similar nature as determined by the Planning Director.
- P3. Industrial, commercial or other noise generating land uses (including roadways, railroads, and airports) should be discouraged if resulting noise levels will exceed 65 dB Ldn (or CNEL) at the boundary areas of planned or zoned noise sensitive land uses.
- P4. The City shall enforce applicable State Noise Insulation Standards (California Administrative Code, Title 24) and Uniform Building Code (UBC noise requirements).
- P6. The preferred method of noise control used is thoughtful site design. Secondly, noise control should be achieved through the use of artificial noise barriers. Site and building design guidelines may include:
- Commercial and industrial structures should be designed so that any noise generated from the interior of the building is focused away from noise sensitive land uses.
 - Loading and unloading activities for commercial uses should be conducted in an enclosed loading dock, preferably with a positive seal between the loading dock and trucks.
- P8. Prior to the approval of a proposed development in a noise impacted area, or the development of an industrial, commercial or other noise generating land use in or near an area containing existing or planned noise sensitive land uses, an acoustical analysis may be required if all of the following findings are made:
- The existing or projected future noise exposure at the exterior of buildings which will contain noise sensitive uses or within proposed outdoor activity areas (patios, decks, backyards, pool areas, recreation areas, etc.) exceeds 65 dB Ldn (or CNEL).
 - Interior residential noise levels resulting from offsite noise are estimated to exceed 45 dBA
 - Estimated or projected noise levels cannot be reduced to the noise exposure limitations specified in this Noise Element by the application of Standard Noise Reduction Methods.

- P9. All land uses shall conform with the airport compatibility guidelines to minimize the impact of airport operation on noise sensitive land uses.

4.7.4 - Methodology

The proposed Walmart's noise impacts were evaluated through noise measurements and modeling of Walmart noise impacts. The analysis is described below.

Measurement Procedure and Criteria

To ascertain the existing noise at and adjacent to the project site, field monitoring was conducted on Monday, November 29, 2010 and Tuesday, November 30, 2010. The field survey noted that noise within the area of the proposed Walmart is generally characterized by vehicle traffic on the local roadways. No aircraft overflights were observed during the noise measurements.

The noise measurements were taken using three Extech Model 407780 Type 2 integrating sound level meters programmed in "slow" mode to record the sound pressure level at 3-second intervals in "A" weighted form. In addition, the L_{eq} averaged over the entire measuring time and L_{max} were recorded. The sound level meters and microphones were mounted on tripods 5 feet above the ground and were equipped with windscreens during all measurements. The sound level meters were calibrated before and after the monitoring using an Extech calibrator, Model 407766. All noise level measurement equipment meets American National Standards Institute specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA).

Noise Measurement Locations

The noise monitoring locations were selected to obtain noise measurements of the current noise levels in project study area and to provide a baseline for any potential noise impacts that may be created by development of the proposed Walmart. The noise measurement sites were selected to provide a representative sampling of the noise levels experienced by nearby sensitive receptors. The sites are described in Table 4.7-3, and are shown in Exhibit 4.7-1. Appendix I includes a photo index of the study area and noise level measurement locations.

Noise Measurement Timing and Climate

The noise measurements were recorded between 1:53 p.m. on November 29, 2010 and 1:52 p.m. on November 30, 2010. When the noise measurements were started on November 29, 2010, it was partly cloudy, the temperature was 54 degrees Fahrenheit (°F), barometric pressure was 30.02 inches of mercury, the humidity was 46 percent, and the wind was around 3 miles per hour. Overnight the temperature dropped to 31°F. At the conclusion of the noise measurements on November 30, 2010, the sky was clear, the temperature was 58°F, barometric pressure was 30.34 inches of mercury, the humidity was 41 percent, and the wind was around 2 miles per hour.

SoundPlan Noise Modeling Software

Since noise in the project vicinity is created by multiple roadways, parking lots, and stationary sources, the SoundPlan Version 7.0 noise modeling software was used. SoundPlan’s road noise, parking lot noise, and stationary noise source algorithms are based on the FHWA Traffic Noise Model (FHWA TNM Model). The SoundPlan Model requires the input of roadways and the locations of the noise measurement receivers. Stationary noise sources with associated frequency spectrums, sound barriers, terrain contour lines, building placement, and specific ground coverage zones may be incorporated as well. The site plan and aerial photos were used to determine the placement of the roadways, parking lots, and stationary sources as well as to establish the terrain in the vicinity of the proposed Walmart. Since the study area is located in a semi-rural environment and either landscaping or native vegetation exists along the sides of all analyzed roadways, loose soil conditions were used to develop noise contours and analyze noise impacts to the Walmart study area. The default temperature and humidity, which can vary the propagation of noise were used in the analysis, and represent reasonable assumptions since they are near the averages experienced in the vicinity of the proposed Walmart.

Existing Roadway Assumptions

The model analyzed the noise impacts from the nearby roadways onto the vicinity of the proposed Walmart, which consists of the area analyzed in the Traffic Impact Analysis (See Appendix J). The roadways were analyzed based on a single-lane-equivalent noise source combining both directions of travel. The roadway parameters used for the SoundPlan modeling are presented below in Table 4.7-6. The roadway classifications are based on the City of Wasco General Plan Circulation Element. The roadway speed is based on the posted speed limits. The existing average daily traffic volumes were either obtained directly from the Traffic Impact Analysis (See Appendix J) or for the roadway segments that did not have average daily traffic volumes they were calculated by multiplying the PM peak-hour intersection volumes by 12. This derivation was determined by comparing the provided average daily traffic volumes to the PM peak hour intersection volumes provided in the Traffic Impact Analysis and provides a conservative estimate of the daily trip volumes.

Table 4.7-6: SoundPlan Model Existing Roadway Parameters

Roadway	Segment	General Plan Classification	Vehicle Speed (miles per hour)	Existing Average Daily Traffic Volumes
Magnolia Avenue	North of State Route 46	Collector	35	335
Magnolia Avenue	South of State Route 46	Collector	35	729
Central Avenue	South of State Route 46	Arterial	45	1,499
Gromer Avenue	East of Magnolia Avenue	Local	30	300
State Route 46	West of Magnolia Avenue	Arterial	45	9,209
State Route 46	West of Central Avenue	Arterial	45	9,555
State Route 46	East of Central Avenue	Arterial	45	11,978
Margalo Street	West of Palm Avenue	Local	25	100

Source: Psomas, 2011; City of Wasco, 2010.

Table 4.7-7 presents the hourly traffic flow distributions (vehicle mixes) used in this analysis. These distributions were obtained from Caltrans and from field observations of similar arterial and collector roads. The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks, and heavy trucks for input into the FHWA and SoundPlan Models.

Table 4.7-7: Roadway Vehicle Mixes

Roadway Classification	Vehicle Type	Percent of Hourly Distribution			
		Day (7 a.m. to 7 p.m.)	Evening (7 p.m. to 10 p.m.)	Night (10 p.m. to 7 a.m.)	Overall
Local - Collector	Automobiles	73.6	13.6	10.2	97.4
	Medium Trucks	0.9	0.9	0.0	1.8
	Heavy Trucks	0.4	0.0	0.4	0.7
Arterial	Automobiles	69.5	12.9	9.6	92.0
	Medium Trucks	1.6	0.8	0.6	3.0
	Heavy Trucks	3.5	1.0	0.5	5.0
State Route 46	Automobiles	45.7	9.4	11.0	66.0
	Medium Trucks	5.8	1.1	3.0	9.9
	Heavy Trucks	12.3	1.7	10.1	24.1

Source: California Department of Transportation, 2010; Michael Brandman Associates, 2011.

In order to determine the height above the road grade from where the noise is being emitted, each type of vehicle has been analyzed independently with autos at road grade, medium trucks at 2.3 feet above road grade, and heavy trucks at 8 feet above road grade. These elevations were determined through a noise-weighted average of the elevation of the exhaust pipe, tires, and mechanical parts in the engine, which are the primary noise emitters from a vehicle.

Modeling Calibration

Receivers were placed at the location of the noise measurement sites in order to assist in the calibration of the model as well as to verify the accuracy of the SoundPlan Model. Table 4.7-8 provides a summary of the calculated results, and a comparison with the measured results shown above in Table 4.7-3.

Table 4.7-8: Model Calibration to Existing Noise Measurement Levels

Site No.	Site Description	Calculated Noise Level ¹ (dBA CNEL)	Measured Noise Level ² (dBA CNEL)	Difference
A	Located north of the project site, approximately 30 feet north of the centerline for Gromer Avenue.	57.7	60.6	2.9
B	Located east of the project site in the last row of trees before the graded area for single-family homes.	55.0	59.0	4.0

Table 4.7-8 (cont.): Model Calibration to Existing Noise Measurement Levels

Site No.	Site Description	Calculated Noise Level ¹ (dBA CNEL)	Measured Noise Level ² (dBA CNEL)	Difference
C	Located southwest of the project site, approximately 80 feet south of the centerline for State Route 46.	70.9	71.8	0.9
Notes: ¹ Noise Level Calculated from SoundPlan Version 7.0. ² Noise measurements taken on Monday, November 29 and Tuesday, November 30, 2010. Source: Michael Brandman Associates, 2011.				

Table 4.7-8 shows that the noise measurement Sites A and C calculated by the SoundPlan Model were within the acceptable tolerances described in Section 5.4.1.6 of the TeNS. Site B has a 4 dB difference which is slightly out of the range of allowable tolerances described in Section 5.4.1.6 of the TeNS, however it is due to the location of Site B, which is approximately 950 feet from the nearest modeled roadway. At this distance from the nearest road, other noises sources such as farming equipment create measurable impacts to the noise environment that were not modeled in the SoundPlan model. Therefore, based on the field noise measurements, the SoundPlan Model provides a relatively accurate representation of the Walmart area noise levels.

FHWA-RD-77-108 Traffic Noise Prediction Model

To predict existing and future noise levels due to traffic traveling 25 miles per hour or above, a computer program that replicates the FHWA Traffic Noise Prediction Model FHWA-RD-77-108 was utilized. The FHWA-RD-77-108 Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level. Adjustments are then made to the reference energy mean emission level to account for the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway); the total average daily traffic (ADT); and the percentage of ADT that flows during the day, evening, and night; the travel speed; the vehicle mix on the roadway; a percentage of the volume of automobiles, medium trucks, and heavy trucks; the roadway grade; the angle of view of the observer exposed to the roadway; and the site conditions (“hard” or “soft”) as they relate to the absorption of the ground, pavement, or landscaping.

Traffic Noise Prediction Model Inputs

The roadway parameters used for this study are presented in Table 4.7-9. The roadway classifications are based on the City of Wasco General Plan Circulation Element. The roadway speeds are based on the posted speed limits. Since the study area is located in a semi-rural environment and either landscaping or agricultural uses exists along the sides of all analyzed roadways, soft site conditions were modeled.

Table 4.7-9: FHWA Model Roadway Parameters

Roadway	Segment	General Plan Classification	Vehicle Speed (miles per hour)
Scofield Avenue	North of State Route 46	Arterial	45
Scofield Avenue	South of State Route 46	Arterial	45
Magnolia Avenue	North of State Route 46	Collector	35
Magnolia Avenue	South of State Route 46	Collector	35
Central Avenue	South of State Route 46	Arterial	45
Beckes Street	South of State Route 46	Minor Collector	30
Palm Avenue	North of State Route 46	Arterial	45
Palm Avenue	South of State Route 46	Collector	35
Poplar Avenue	South of State Route 46	Minor Collector	30
Griffith Avenue	North of State Route 46	Collector	35
Griffith Avenue	South of State Route 46	Collector	35
F Street North	North of State Route 46	Collector	35
State Route 43 South	South of State Route 46	Collector	35
State Route 43 North	North of State Route 46	Arterial	45
J Street	South of State Route 46	Arterial	45
State Route 46	West of Scofield Avenue	Arterial	45
State Route 46	West of Magnolia Avenue	Arterial	45
State Route 46	West of Central Avenue	Arterial	45
State Route 46	East of Central Avenue	Arterial	45
State Route 46	East of Palm Avenue	Arterial	45
State Route 46	East of Broadway Street	Arterial	45
State Route 46	East of State Route 43 South	Arterial	45

Source: City of Wasco, 2010.

In order to determine the offsite Walmart-generated traffic noise impacts, the average daily traffic volumes on the study area roadways were obtained from the Traffic Impact Analysis (See Appendix J). The average daily traffic volumes were provided for existing year, opening year 2013 without project, opening year 2013 with Walmart, cumulative conditions year 2035 without Walmart, and cumulative conditions year 2035 with Walmart scenarios. The ADT volumes were calculated by multiplying the PM peak-hour intersection volumes by 12. The calculated average daily traffic volumes are shown in Table 4.7-10.

Table 4.7-10: FHWA Model Average Daily Traffic

Roadway	Segment	Average Daily Traffic				
		Existing	Opening Year 2013		Cumulative Year 2035	
			Without Walmart	With Walmart	Without Walmart	With Walmart
Scofield Avenue	North of State Route 46	1,109	1,160	1,221	1750	1,785
Scofield Avenue	South of State Route 46	2,867	2,998	3,181	4611	4,714
Magnolia Avenue	North of State Route 46	335	371	493	915	984
Magnolia Avenue	South of State Route 46	729	762	1,067	2066	2,239
Central Avenue	South of State Route 46	1,499	1,577	2,187	4188	4,534
Beckes Street	South of State Route 46	2,220	2,340	2,530	3,420	3,540
Palm Avenue	North of State Route 46	1,905	2,002	2,611	4751	5,098
Palm Avenue	South of State Route 46	3,925	4,124	5,038	8,608	9,128
Poplar Avenue	South of State Route 46	1,190	1,250	1,600	2,900	3,080
Griffith Avenue	North of State Route 46	1,500	1,640	1,945	3,230	3,403
Griffith Avenue	South of State Route 46	2,399	2,528	3,138	5,437	5,783
F Street North	North of State Route 46	1,752	1,832	2,015	3,063	3,167
State Route 43 South	South of State Route 46	7,767	8,151	8,761	12,885	13,231
State Route 43 North	North of State Route 46	5,577	5,842	5,964	8,161	8,230
J Street	South of State Route 46	4,450	4,663	4,846	6,806	6,910
State Route 46	West of Scofield Avenue	7,388	7,785	8,151	11,517	11,724
State Route 46	West of Magnolia Avenue	9,209	9,689	10,299	14,886	15,232
State Route 46	West of Central Avenue	9,555	10,051	11,087	20,110	20,900
State Route 46	East of Central Avenue	11,978	12,595	17,042	21,320	24,850
State Route 46	East of Palm Avenue	15,044	15,831	18,572	30,362	31,920
State Route 46	East of Broadway Street	14,456	15,186	16,709	25,330	26,195
State Route 46	East of State Route 43 South	11,579	12,148	12,574	17,543	17,785

Source: Psomas, 2011.

The vehicle mixes used in the FHWA-RD-77-108 Model have been provided previously in Table 4.7-7. The FHWA-RD-77-108 Model utilized the State Route 46, which have been obtained from the Caltrans website and the collector and arterial vehicle mixes.

Source Assumptions

To assess the roadway noise generation in a uniform manner, all vehicles were analyzed at the single-lane-equivalent acoustic center of the roadway being analyzed, which means they all lanes were analyzed as one lane located at the centerline of the roadway, instead of analyzing each lane in the roadway as a separate noise source. The width of each single-lane equivalent was based on the right-of-way and near-far lane lengths (i.e., the distance between the middle lines of each outside lane) as determined by the General Plan Roadway Classification. In order to determine the height above the road grade from where the noise is being emitted, each type of vehicle has been analyzed independently with autos at road grade, medium trucks at 2.3 feet above road grade, and heavy trucks at 8 feet above road grade. These elevations were determined through a noise-weighted average of the elevation of the exhaust pipe, tires, and mechanical parts in the engine, which are the primary noise emitters from a vehicle.

Transportation and Stationary Noise Impacts

In addition to the increase of traffic on the nearby roadways, the proposed Walmart may cause potential stationary noise impacts onto the nearby residences from the proposed onsite roads, rooftop mechanical equipment, trash compactors, truck loading areas, parking lot areas, drive thru speakers, and outdoor garden center. In order to determine the proposed Walmart impacts onto the existing and proposed nearby residences, the opening year 2013 and cumulative year 2035 without and with Walmart scenarios were analyzed using the SoundPlan model. The scenarios were based on the SoundPlan modeling methodology presented above for the existing conditions. The following describes the input parameters of the SoundPlan model that were modified from the existing scenario.

Proposed Roadway Assumptions

The without Walmart noise levels have been analyzed in the SoundPlan Model for the opening year 2013 and cumulative year 2035 scenarios in order to provide a baseline to determine the proposed Walmart's noise increases onto the project study area. The without Walmart scenarios were analyzed based on the same roadways that were analyzed for the existing scenario described above for the opening year 2013 scenario. The cumulative year 2035 scenario also included the extension of Central Avenue north of State Route 46, Driveway 3 north of State Route 46, and Margalo Street west to Driveway 3. The parameters used in the analysis are shown in Table 4.7-11 for both the opening year 2013 and cumulative year 2035 conditions.

The hourly traffic flow distributions (vehicle mixes) used in this analysis have been provided above in Table 4.7-7, and the roadways were assigned the same vehicle mixes used for the existing scenario. The extension of Central Avenue utilized the arterial vehicle mix, the onsite truck route (Driveway 1)

utilized the State Route 46 vehicle mix, and all other new roadways were based on the collector vehicle mix.

Table 4.7-11: SoundPlan Model Roadway Parameters

Roadway	Segment	Average Daily Traffic Volumes			
		Year 2013 No Project	Year 2013 With Project	Year 2035 No Project	Year 2035 With Project
Magnolia Avenue	North of State Route 46	371	493	915	984
Magnolia Avenue	South of State Route 46	762	1,067	2066	2,239
Central Avenue	North of Driveway 2	0	140	800	850
Central Avenue	North of Driveway 4	0	5,500	7,520	9,730
Central Avenue	North of State Route 46	0	8,360	8,940	11,900
Central Avenue	South of State Route 46	1,577	2,187	4188	4,534
Gromer Avenue	East of Magnolia Avenue	300	300	300	300
Margalo Street	East of Driveway 3	0	100	100	100
Margalo Street	West of Palm Avenue	100	100	100	100
State Route 46	West of Magnolia Avenue	9,689	10,299	14,886	15,232
State Route 46	West of Central Avenue	10,051	11,087	20,110	20,900
State Route 46	East of Central Avenue	12,595	17,042	21,320	24,850
Driveway 3	North of State Route 46	0	2,060	2,590	3,370
Driveway 1	West of Central Avenue	0	140	0	60
Driveway 2	West of Central Avenue	0	5,350	3,840	6,000
Driveway 4	West of Central Avenue	0	1,900	1,430	2,180

Source: Psomas, 2011; Michael Brandman Associates, 2011.

Proposed Truck Loading Area Assumptions

The SoundPlan model analyzed the noise impacts from the two loading areas at the proposed Walmart. In order to determine the noise level created during the operation of a truck loading area, a reference noise measurement was taken at the Los Banos Walmart (Store No. 2117). During the reference noise measurement, the truck engine was only operational while the truck was moving; however, the truck refrigeration unit was operational the entire duration, as were a hand pallet and mechanical push sweeper. The entire truck visit lasted for approximately 30 minutes and a noise level of 63.3 dBA L_{eq} at 10 feet from the edge of the truck loading area was recorded. The reference noise measurement recorded the sound power spectrum in 1/3 octaves and found that a “pure tone” was not created during the truck loading activities. Appendix I provides the noise measurement printouts.

The proposed Walmart was analyzed with separate loading areas for the tractor trailers and vendor trucks. The truck volumes were obtained from Appendix D, Air Quality. The loading area for the tractor trailers was modeled on the northwest side of the store and was analyzed based on 6 tractor trailer visits per day for 30 minutes each, which resulted in the loading area being active for 16 percent of the time during the daytime (7 a.m. to 10 p.m.), and 7 percent of the time during the nighttime (10 p.m. to 7 a.m.). Walmart trucks are equipped with an automatic kill switch that activates after 3 minutes of idling; however, refrigeration units and non-Walmart trucks may not have these automatic kill switches installed. The loading area for the vendor trucks was modeled on the north side of the store and was analyzed based on 5 vendor trucks per day, in order to provide a worst-case scenario the vendor trucks used the same parameters as for the tractor trailers, which resulted in the vendor truck area being active for 13 percent of the time during the daytime and 6 percent during the nighttime. Each truck loading area was modeled as area sources located 8 feet above ground level and were calibrated to the measured 63.3 dBA L_{eq} at 10 feet.

Proposed Walmart Parking Lot Assumptions

The SoundPlan model also analyzed the noise impacts from the proposed parking lot for the Walmart. In order to determine the noise created from the parking lot areas, a 24-hour noise measurement was taken 10 feet from the parking lot for the Laguna Niguel Walmart (Store No. 2206), which measured noise levels of 59.5 dBA L_{eq} , 64.4 dBA L_{dn} , and 87.4 dBA L_{max} . The maximum noise level that was measured included the operation of a parking lot sweeper. In addition, the hourly average noise levels were calculated from the noise measurement, which found a minimum average noise of 46.4 dBA L_{eq} occurring between 4 a.m. and 5 a.m. and a maximum average noise of 64.4 dBA L_{eq} occurring between 3 p.m. and 4 p.m. The hourly average noise levels were entered into the SoundPlan model. Since the noise meter used for the 24-hour measurement did not have the capability of capturing the frequency spectrum of the parking lot noise, another short-term noise measurement was taken 10 feet from the parking lot for the Sonora Walmart (Store No. 2030), which measured a noise level of 58.9 dBA L_{eq} and 74.9 dBA L_{max} . The short-term noise measurement captured the sound pressure level in 1/3 octaves and the frequency spectrum was entered into the SoundPlan model. The parking lot noise was calibrated to a receiver placed 10 feet away that measured 64.4 dBA L_{dn} .

Proposed Trash Compactor Assumptions

The SoundPlan model analyzed the noise impacts from the proposed trash compactor on the north side of the proposed Walmart. In order to determine the noise level created during the operation of a trash compactor, a reference noise measurement was taken at the Sonora Walmart (Store No. 2030). The field noise measurement recorded the sound power spectrum in 1/3 octaves and found that a trash compactor produced a noise level of 70.4 dBA L_{eq} and 85.0 dBA L_{max} at 10 feet. The reference noise measurement was also cross-checked for pure tones, which found no pure tones were created during the noise measurement of a trash compactor. A trash compactor cycle lasted for approximately 1 minute and according to Walmart staff, the trash compactor may run as many as three times per hour.

The trash compactor noise source was placed 4 feet off the ground and was modeled on running 5 percent per hour and based on a noise level calibrated to the measured 70.4 dBA L_{eq} at 10 feet.

Proposed Walmart Tire & Lube Express Assumptions

The SoundPlan model also analyzed the noise impacts from the proposed Tire & Lube Express on the northeast corner of Walmart. In order to determine the noise level created during the operation of the Tire & Lube Express, a reference noise measurement was taken at the Los Banos Walmart (Store No. 2117). The field noise measurement recorded the sound power spectrum in 1/3 octaves and found that a Tire & Lube Express produced a noise level of 66.1 dBA L_{eq} and 87.1 dBA L_{max} at 20 feet south of an operational carbay. The reference noise measurement was also cross-checked for pure tones, which found no pure tones were created during the noise measurement of the Tire & Lube Express.

The proposed Tire & Lube Express has three car bays with drive-through doorways on its east side. These doorways are anticipated to be open during the proposed Tire & Lube Express hours of operation from 7 a.m. to 7 p.m. The Tire & Lube Express was modeled as a line source and placed at the position of the three proposed doorways and four feet off the ground. The line source was calibrated to the measured 66.1 dB L_{eq} at 20 feet and operating 50 percent from 7 a.m. to 7 p.m., which was based on field observations of activity levels.

Proposed Walmart Garden Center Assumptions

A 24-hour field noise measurement of an existing garden center was previously taken at the Laguna Niguel Laguna Niguel Walmart (Store No. 2206). The noises observed during the noise measurement primarily consisted of shopping carts, people talking, the moving of stock with a forklift, announcements over the public address (PA) system, and vehicle noise in the nearby parking lot. The noise measurement recorded noise levels of 52.9 dBA L_{eq} , 58.5 dBA L_{dn} , and 82.5 dBA L_{max} at the outer fence of the garden center. In addition, the hourly average noise levels were calculated from the noise measurement, which found a minimum average noise of 44.1 dBA L_{eq} occurring between 12 a.m. and 1 a.m. and a maximum average noise of 58.4 dBA L_{eq} occurring between 1 p.m. and 2 p.m. The hourly average noise levels were entered into the SoundPlan model. Since the noise meter used for the 24-hour measurement did not have the capability of capturing the frequency spectrum of the garden center noise, another short-term noise measurement was taken 5 feet from the Rohnert Park Walmart Garden Center (Store No. 1755). The noise measurement captured noise levels of 57.9 dBA L_{eq} and 77.0 dBA L_{max} . The proposed Walmart was modeled as an area noise that is based on a noise level calibrated to the measured 58.5 dBA L_{dn} described above and operational continuously 24-hours per day.

The proposed Garden Center would include a PA system. According to Walmart representatives, the PA system would consist of 10 watt speakers that are rated up to a maximum volume of 110 dB and are powered by a 120 watt amp that has a 10 step volume control, with a maximum output of 75 dB

per speaker. The measured maximum noise levels above exceed the maximum speaker output, which indicates the maximum levels were created from another noise source.

The proposed Garden Center would also require the operation of forklifts. According to Walmart representatives, the forklifts would use propane fuel and their backup beepers would range between 82 and 102 dBA, which are self-adjusting to produce a noise level 10 to 15 dB above the ambient noise level. The measured maximum noise levels above most likely captured the backup beepers from the operation of forklifts.

Proposed Drive-Thru Speakers Assumptions

The SoundPlan model also analyzed the noise impacts from the proposed drive-thru speakers for a two lane drive through pharmacy on the southwest corner of the proposed Walmart. In order to determine the noise created from a drive thru speaker, a noise measurement was taken 10 feet from the drive-thru speaker for a McDonald's restaurant in Santa Rosa, which measured a noise level of 61.2 dBA L_{eq} and 73.6 dBA L_{max} . The noise measurement captured the sound pressure level in 1/3 octaves and the frequency spectrum was entered into the SoundPlan model. The drive-thru speaker was modeled based on a noise level calibrated to 61.2 dB L_{eq} at ten feet and operational 50 percent of the time during the daytime (7 a.m. to 10 p.m.) and operational 20 percent of the time during the nighttime, based on field observations of other drive thru pharmacies.

Proposed Rooftop Mechanical Equipment Assumptions

The SoundPlan model also analyzed the noise impacts from the HVAC and refrigeration units on the proposed Walmart. The rooftop mechanical noise levels were calibrated to noise measurements of similar units at the San Bernardino Highland Avenue Walmart (Store No. 1914). The noise measurement was taken 10 feet from an operational rooftop unit, which measured a noise level of 59.5 dBA L_{eq} and 60.3 dBA L_{max} . The 1/3 octave center frequency sound pressure levels from the reference noise measurement were inputted into the SoundPlan Model, in order for the Model to calculate the appropriate sound attenuation rates. The reference noise measurement was also cross-checked for pure tones, which found no pure tones were created during the noise measurement of the rooftop mechanical equipment. The calibration noise level, segmented into 1/3 octaves, is provided in Appendix I. Each rooftop mechanical equipment unit was modeled for running 50 percent of each hour between the hours of 7 a.m. and 7 p.m. and 20 percent of each hour between 7 p.m. and 7 a.m., which was based on the number of operational units during the noise measurement of the rooftop mechanical equipment. Placement of the rooftop units onto the proposed Walmart was based on a ratio of one unit per 4,600 square feet, which was calculated on the number of units at the San Bernardino Highland Avenue Walmart. This resulted in 37 rooftop mechanical units for the proposed Walmart. Each point source was modeled 3 feet above roof level and based on a noise level calibrated to 59.5 dB L_{eq} at 10 feet.

4.7.5 - Thresholds of Significance

According to the CEQA Guidelines' Appendix G, Environmental Checklist, to determine whether noise impacts are significant environmental effects, the following questions are analyzed and evaluated. Would the project:

- a) 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?
- b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? (Refer to Section 7, Effects Found Not To Be Significant.)
- c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
- d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?
- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? (Refer to Section 7, Effects Found Not To Be Significant.)
- f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? (Refer to Section 7, Effects Found Not To Be Significant.)

Policy 3 of the City's General Plan Noise Element limits noise impacts at the boundary areas of planned or zoned noise sensitive land uses to 65 dB CNEL or less at exterior areas. As defined above in Section 4.7.2, CNEL is a 24-hour noise descriptor that accounts for the noise sensitive evening and nighttime hours, when nearby residents have an increased sensitivity to sounds by adding a penalty to these time periods.

Where the without Walmart condition already exceeds the City's 65 dB CNEL exterior threshold, the City's General Plan provides no definition of what constitutes a substantial noise increase. However, the 1992 findings of the Federal Interagency Committee on Noise (FICON), which assessed changes in ambient noise levels resulting from aircraft operations, provides guidance that can be used to define substantial changes in noise levels that may be caused by the proposed Walmart. The thresholds below apply to transportation noise that is usually expressed in terms of average noise exposure during a 24-hour period, such as the L_{dn} or CNEL. Walmart-generated increases in noise levels that exceed those outlined in the thresholds below, and that affect existing noise-sensitive land uses (receptors) are considered substantial and, therefore, would constitute a significant noise impact. The proposed Walmart would create a significant exterior noise impact if (1) it would independently increase noise levels to above 65 dB CNEL at the exterior of any nearby sensitive receptor or (2)

create an exterior noise increase of 1.5 dB or more at sensitive receptors where the without Walmart noise level exceeds 65 dBA CNEL.

In addition to the exterior noise threshold described above, this analysis includes a conservative approach in identifying potentially significant interior noise impacts. According to the California Code of Regulations, Titles 21 and 24, interior noise levels for the construction of new habitable rooms shall not exceed a noise level of 45 dB. The proposed project does not include the construction of habitable rooms; however, the 45 dB noise level is conservatively used to determine if the proposed project would create a significant impact on the interior noise levels of existing residential units. This analysis considers a project would create a significant interior noise impact if (1) it would independently increase interior noise levels to above 45 dB CNEL at any sensitive receptor (i.e., residential unit) or (2) create an interior noise increase of 1.5 dB or more at sensitive receptors when the interior noise levels already exceeds the interior noise levels of 45 dB CNEL. A 1.5 dB CNEL interior noise level increase is used to be consistent with 1992 findings of the Federal Interagency Committee on Noise (FICON) for exterior noise level increase, and an increase of 1.5 dB CNEL is not considered an audible increase as described in Section 4.7.2, above, and therefore, considered a less than significant change in noise level.

Due to the temporary nature of construction, construction noise is typically exempt from City noise standards on the condition it does not occur during the noise sensitive nighttime hours. However, neither the City's General Plan Noise Element nor the Municipal Code provide any direction on how construction noise should be analyzed. Therefore, in order to provide a conservative analysis, construction noise has been analyzed based on the same exterior threshold as described above for operational noise.

4.7.6 - Impact Analysis and Mitigation Measures

Noise Levels in Excess of Standards

Impact N-1: **The proposed Walmart could expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.**

Project Specific Impact Analysis

This impact discussion analyzes the potential for construction and operational noise associated with the proposed Walmart to cause an exposure of persons to or generation of noise levels in excess of established City of Wasco noise standards of 65 dB CNEL or less at the boundary areas of planned or zoned noise sensitive uses. For nearby residential uses that already exceed these standards, a significant noise impact would occur if the proposed Walmart would increase noise levels by 1.5 dB or more where the without Walmart noise level is greater than 65 dBA CNEL.

Construction-Related Noise

Construction noise represents a short-term increase in ambient noise levels. Noise impacts from construction activities associated with the proposed Walmart would be a function of the noise

generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The construction activities for the proposed Walmart is anticipated to include grading of the project site, construction of approximately 170,000 square feet of building space, paving of internal roadways and parking areas, and landscaping. The closest noise-sensitive receptors are residential homes located as near as 1,500 feet to the north, 1,600 feet to the east, 700 feet to the south, and 1,800 feet to the west of the project site. In addition, land zoned or planned for residential uses is located 60 feet to the north across the future alignment of Margalo Street and 110 feet to the east across the future alignment of Central Avenue.

Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels listed in Table 4.7-2 and using the SoundPlan Model. The greatest noise impacts to the nearby residential uses would be anticipated to occur during the grading of the project site. Construction noise has been modeled on the equipment assumption used in Section 4.3, Air Quality, which assumed the grading of the project site would consist of the simultaneous operation of one grader, two off highway trucks, one other material handling equipment, one rubber tired dozer, one water truck, and two of either a tractor, loader, or backhoe. The equipment was placed along the edge of the project site and 8 feet above ground level. In addition, construction activities associated with the proposed Walmart would be consistent with the City of Wasco Municipal Code regarding construction noise. All construction equipment activities were modeled to occur between the hours of 7:00 AM and 7:00 PM Monday through Friday and 9:00 AM and 6:00 PM on weekends. A summary of the results of the noise impacts associated with the construction of the proposed Walmart is shown in Table 4.7-12 and Appendix I provides the SoundPlan printouts.

Table 4.7-12: Construction Noise Impacts at Nearby Receptors Prior to Mitigation

Receiver ¹	Description	Existing dBA L _{eq} Day	Existing Plus Construction dBA L _{eq} Day	Increase Over Existing
1	Single-family home to the north	42.2	50.7	8.5
2	Proposed residential to the north ²	42.6	77.2	34.6
3	Proposed residential to the east ³	48.8	77.5	28.7
4	Proposed residential to the east ³	53.7	77.8	24.1
5	Single-family home to the east	43.2	53.8	10.6
6	Single-family home to the east	47.9	54.9	7.0
7	Multi-family home to the south	57.2	63.8	6.6
8	Single-family home to the southwest	68.3	68.9	0.6
9	Single-family home to the southwest	63.7	63.9	0.2
10	Single-family home to the west	50.0	52.4	2.4

Table 4.7-12 (cont.): Construction Noise Impacts at Nearby Receptors Prior to Mitigation

Receiver ¹	Description	Existing dBA L _{eq} Day	Existing Plus Construction dBA L _{eq} Day	Increase Over Existing
11	Single-family home to the west	42.0	48.5	6.5
12	Single-family home to the northwest	48.0	50.4	2.4

Notes:
¹ Location of Receivers shown on Exhibit 4.7-3.
² Located 80 feet north of the property line to account for a 60 foot right-of-way for Margalo Street and a 20 foot setback.
³ Located at nearest point of proposed Wasco Center multi-family residential structure and worst-case noise of either first or second floor
Source: Michael Brandman Associates, 2011.

Table 4.7-12 shows that construction activities would increase exterior noise levels from below 65 dBA to above the City's 65 dBA noise sensitive land use (i.e., residential) standard at Receivers 2, 3, and 4. Table 4.7-12 also shows construction activities would exceed the City's land use standard for exterior areas at Receiver 8; however, the project's construction noise would not increase levels by 1.5 dBA or more at sensitive receptors. Receivers 2, 3, and 4 represent locations of proposed residential uses or property that is zoned for residential use; and these future receivers could experience a significant noise impact if the residences are constructed and occupied prior to completion of construction on the project site.

Mitigation (MM N-1b) is proposed that would require the contractor to install a temporary 14-foot high noise barrier along the property line of the project site that is within 300 feet of any residential unit that is constructed and occupied as well as properly maintaining all construction equipment. If the properties that are within 300 feet of the project site and proposed for residential or zoned for residential use (i.e., north and adjacent to Margalo Street and east and adjacent to Central Avenue) are not constructed and occupied prior to completion of construction activities on the project site, this measure is not required. If residential uses are constructed and occupied within 300 feet of the project site, this measure is required. The construction noise levels have been recalculated based on the use of a 14-foot high noise barrier along the property line of the project site and the proper maintenance of the onsite construction equipment. The results are shown in Table 4.7-13.

Table 4.7-13: Mitigated Construction Noise Impacts at Nearby Receptors

Receiver ¹	Description	Existing dBA L _{eq} Day	Existing Plus Construction dBA L _{eq} Day	Increase Over Existing
1	Single-family home to the north	42.2	46.4	4.2
2	Proposed residential to the north ²	42.6	63.5	20.9

Table 4.7-13 (cont.): Mitigated Construction Noise Impacts at Nearby Receptors

Receiver ¹	Description	Existing dBA L _{eq} Day	Existing Plus Construction dBA L _{eq} Day	Increase Over Existing
3	Proposed residential to the east ³	48.8	63.8	15.0
4	Proposed residential to the east ³	53.7	64.8	11.1
5	Single-family home to the east	43.2	46.8	3.6
6	Single-family home to the east	47.9	49.8	1.9
7	Multi-family home to the south	57.2	63.0	5.8
8	Single-family home to the southwest	68.3	68.9	0.6
9	Single-family home to the southwest	63.7	63.9	0.2
10	Single-family home to the west	50.0	52.4	2.4
11	Single-family home to the west	42.0	47.3	5.3
12	Single-family home to the northwest	48.0	49.6	1.6

Notes:
¹ Location of Receivers shown on Exhibit 4.7-3.
² Located 80 feet north of the property line to account for a 60 foot right-of-way for Margalo Street and a 20 foot setback.
³ Located at nearest point of proposed Wasco Center multi-family residential structures and worst-case noise of either first or second floor.
 Source: Michael Brandman Associates, 2011.

Table 4.7-13 shows that with implementation of the proposed temporary 14-foot high noise barrier (Mitigation Measure N-1b) and properly maintaining construction equipment (Mitigation Measure N-1a), construction noise levels at Receivers 2, 3, and 4 would be reduced to below 65 dB, which is within the City’s 65 dB residential standard. Construction noise is temporary and would cease at the conclusion of construction. In addition, construction activities associated with the proposed Walmart would be consistent with the City of Wasco Municipal Code regarding construction noise and would not occur during the nighttime hours when loud noise would be most disruptive and intrusive. For these reasons, the proposed Walmart’s construction activities would not cause a substantial temporary increase in ambient noise levels. Impacts would be less than significant after the implementation of Mitigation Measures N-1a and N-1b.

Operational Roadway Noise

The proposed Walmart would generate additional vehicular trips on roadways in the project vicinity. Noise from motor vehicles is generated by engine vibrations, the interaction between tires and the road, and the exhaust system. The potential offsite noise impacts caused by the increase in vehicular traffic from the ongoing operations from the proposed Walmart onto the project study area roadways have been analyzed for the following four traffic scenarios:

- **Year 2013 Without Walmart Condition:** This scenario refers to the future year 2013 traffic noise conditions consisting of existing plus a 1.5 percent annual ambient growth rate plus traffic generated from the proposed Red Roof Inn, without construction of the proposed Walmart.
- **Year 2013 With Walmart Condition:** This scenario refers to the future year 2013 traffic noise conditions consisting of existing, plus a 1.5 percent annual ambient growth rate plus traffic generated from the proposed Red Roof Inn, with construction of the proposed Walmart.
- **Year 2035 Without Walmart Conditions:** This scenario refers to the future year 2035 traffic noise conditions consisting of a 1.5 percent annual ambient growth rate plus traffic generated from the proposed Red Roof Inn and Wasco Center, without construction of the proposed Walmart.
- **Year 2035 With Walmart Conditions:** This scenario refers to the future year 2035 traffic noise conditions consisting of a 1.5 percent annual ambient growth rate plus traffic generated from the proposed Red Roof Inn and Wasco Center, with construction of the proposed Walmart.

In order to quantify the traffic noise impacts along the analyzed roadways, the roadway noise contours were calculated. Noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway. For analysis comparison purposes, the L_{dn} and CNEL noise levels are calculated at 60 feet from the centerline, which through field observations is representative of the nearest homes along the study area roadways. In addition, the distance from the centerline to the 55-, 60-, 65-, and 70-dBA noise levels are calculated for both L_{dn} and CNEL standards and the noise calculation spreadsheets are provided in Appendix I.

Year 2013 Without Walmart Conditions

The calculated year 2013 without Walmart condition noise contours are shown in Table 4.7-14.

Table 4.7-14: Year 2013 Without Walmart Traffic Noise Contours

Roadway	Segment	CNEL at 60 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Scofield Avenue	North of State Route 46	56.0	RW	RW	RW	69
Scofield Avenue	South of State Route 46	60.1	RW	RW	61	131
Magnolia Avenue	North of State Route 46	47.2	RW	RW	RW	RW
Magnolia Avenue	South of State Route 46	50.4	RW	RW	RW	RW
Central Avenue	South of State Route 46	57.3	RW	RW	RW	85

Table 4.7-14 (cont.): Year 2013 Without Walmart Traffic Noise Contours

Roadway	Segment	CNEL at 60 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Beckes Street	South of State Route 46	53.2	RW	RW	RW	46
Palm Avenue	North of State Route 46	58.3	RW	RW	RW	100
Palm Avenue	South of State Route 46	57.7	RW	RW	RW	91
Poplar Avenue	South of State Route 46	50.5	RW	RW	RW	30
Griffith Avenue	North of State Route 46	53.7	RW	RW	RW	49
Griffith Avenue	South of State Route 46	55.6	RW	RW	RW	66
F Street North	North of State Route 46	54.2	RW	RW	RW	53
State Route 43 South	South of State Route 46	60.7	RW	RW	66	143
State Route 43 North	North of State Route 46	63.0	RW	RW	95	204
J Street	South of State Route 46	62.0	RW	RW	81	176
State Route 46	West of Scofield Avenue	69.2	RW	115	247	533
State Route 46	West of Magnolia Avenue	63.6	56	121	262	564
State Route 46	West of Central Avenue	63.8	58	124	268	578
State Route 46	East of Central Avenue	64.8	67	145	312	672
State Route 46	East of Palm Avenue	65.8	78	169	363	782
State Route 46	East of Broadway Street	65.6	76	164	353	761
State Route 46	East of State Route 43 South	64.6	66	141	304	656
Notes: RW = Noise contour is located within right-of-way of roadway. Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108; Michael Brandman Associates, 2011.						

The calculated year 2013 without Walmart noise contours in Table 4.7-14 shows that the analyzed roadway segments of State Route 46; west of Scofield Avenue, east of Palm Avenue, and east of Broadway Street would exceed the City’s 65 dBA CNEL residential noise standard. The noise levels from all analyzed roadway segments would range from 47.2 to 69.2 dBA CNEL.

Year 2013 With Walmart Conditions

The calculated year 2013 with Walmart condition noise contours are shown in Table 4.7-15.

Table 4.7-15: Year 2013 With Walmart Traffic Noise Contours

Roadway	Segment	CNEL at 60 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Scofield Avenue	North of State Route 46	56.2	RW	RW	RW	72
Scofield Avenue	South of State Route 46	60.3	RW	RW	63	136
Magnolia Avenue	North of State Route 46	48.5	RW	RW	RW	RW
Magnolia Avenue	South of State Route 46	51.8	RW	RW	RW	RW
Central Avenue	South of State Route 46	58.7	RW	RW	RW	106
Beckes Street	South of State Route 46	53.6	RW	RW	RW	48
Palm Avenue	North of State Route 46	59.5	RW	RW	55	119
Palm Avenue	South of State Route 46	58.6	RW	RW	48	104
Poplar Avenue	South of State Route 46	51.6	RW	RW	RW	35
Griffith Avenue	North of State Route 46	54.4	RW	RW	RW	55
Griffith Avenue	South of State Route 46	56.5	RW	RW	RW	76
F Street North	North of State Route 46	54.6	RW	RW	RW	56
State Route 43 South	South of State Route 46	61.0	RW	RW	70	150
State Route 43 North	North of State Route 46	63.1	RW	RW	96	207
J Street	South of State Route 46	62.2	RW	RW	84	180
State Route 46	West of Scofield Avenue	69.4	RW	118	255	549
State Route 46	West of Magnolia Avenue	63.9	59	127	273	587
State Route 46	West of Central Avenue	64.2	62	133	286	617
State Route 46	East of Central Avenue	66.1	82	177	381	822
State Route 46	East of Palm Avenue	66.5	87	187	404	870
State Route 46	East of Broadway Street	66.0	81	175	376	811
State Route 46	East of State Route 43 South	64.8	67	145	311	671
Notes: RW = Noise contour is located within right-of-way of roadway. Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108; Michael Brandman Associates, 2011.						

The calculated year 2013 with Walmart noise contours in Table 4.7-15 shows that when compared with the opening year 2013 without Walmart conditions, State Route 46 east of Central Avenue would be the only additional roadway segments to exceed the City's 65 dBA CNEL residential noise standard. The noise levels from all analyzed roadway segments would range from 48.5 to 69.4 dBA CNEL.

Year 2035 Without Walmart Conditions

The calculated year 2035 without Walmart condition noise contours are shown in Table 4.7-16.

Table 4.7-16: Year 2035 Without Walmart Traffic Noise Contours

Roadway	Segment	CNEL at 60 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Scofield Avenue	North of State Route 46	57.7	RW	RW	RW	91
Scofield Avenue	South of State Route 46	61.9	RW	RW	81	174
Magnolia Avenue	North of State Route 46	51.2	RW	RW	RW	RW
Magnolia Avenue	South of State Route 46	54.7	RW	RW	RW	57
Central Avenue	South of State Route 46	61.5	RW	RW	76	163
Beckes Street	South of State Route 46	54.9	RW	RW	RW	59
Palm Avenue	North of State Route 46	62.1	RW	RW	82	178
Palm Avenue	South of State Route 46	60.9	RW	RW	69	148
Poplar Avenue	South of State Route 46	54.2	RW	RW	RW	53
Griffith Avenue	North of State Route 46	56.6	RW	RW	RW	77
Griffith Avenue	South of State Route 46	58.9	RW	RW	51	109
F Street North	North of State Route 46	56.4	RW	RW	RW	74
State Route 43 South	South of State Route 46	62.6	RW	RW	90	194
State Route 43 North	North of State Route 46	64.4	RW	RW	118	255
J Street	South of State Route 46	63.6	RW	RW	105	226
State Route 46	West of Scofield Avenue	70.9	69	149	321	691
State Route 46	West of Magnolia Avenue	65.5	75	162	348	751
State Route 46	West of Central Avenue	66.8	92	198	426	917
State Route 46	East of Central Avenue	67.1	95	206	443	954
State Route 46	East of Palm Avenue	68.6	121	260	560	1207
State Route 46	East of Broadway Street	67.8	107	231	497	1070
State Route 46	East of State Route 43 South	66.2	84	180	389	838
Notes: RW = Noise contour is located within right-of-way of roadway. Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108; Michael Brandman Associates, 2011.						

The calculated year 2035 without Walmart noise contours in Table 4.7-16 shows that only the analyzed roadway segments of State Route 46 would exceed the City’s 65 dBA CNEL residential noise standard. The noise levels from all analyzed roadway segments would range from 51.2 to 70.9 dBA CNEL.

Year 2035 With Walmart Conditions

The calculated year 2035 with Walmart condition noise contours are shown in Table 4.7-17.

Table 4.7-17: Year 2035 With Walmart Traffic Noise Contours

Roadway	Segment	CNEL at 60 feet (dBA)	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Scofield Avenue	North of State Route 46	57.8	RW	RW	RW	93
Scofield Avenue	South of State Route 46	62.0	RW	RW	82	177
Magnolia Avenue	North of State Route 46	51.5	RW	RW	RW	RW
Magnolia Avenue	South of State Route 46	55.0	RW	RW	RW	60
Central Avenue	South of State Route 46	61.9	RW	RW	80	172
Beckes Street	South of State Route 46	55.0	RW	RW	RW	60
Palm Avenue	North of State Route 46	62.4	RW	RW	86	186
Palm Avenue	South of State Route 46	61.2	RW	RW	72	154
Poplar Avenue	South of State Route 46	54.4	RW	RW	RW	55
Griffith Avenue	North of State Route 46	56.9	RW	RW	RW	80
Griffith Avenue	South of State Route 46	59.2	RW	RW	53	114
F Street North	North of State Route 46	56.6	RW	RW	RW	76
State Route 43 South	South of State Route 46	62.8	RW	RW	92	198
State Route 43 North	North of State Route 46	64.5	RW	55	119	256
J Street	South of State Route 46	63.7	RW	RW	106	228
State Route 46	West of Scofield Avenue	71.0	70	151	325	700
State Route 46	West of Magnolia Avenue	65.6	76	164	354	762
State Route 46	West of Central Avenue	67.0	94	203	437	941
State Route 46	East of Central Avenue	67.7	106	228	490	1056
State Route 46	East of Palm Avenue	68.8	125	269	579	1248
State Route 46	East of Broadway Street	67.9	109	236	508	1094
State Route 46	East of State Route 43 South	66.3	85	182	392	845

Notes:
RW = Noise contour is located within right-of-way of roadway.
Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108; Michael Brandman Associates, 2011.

The calculated year 2035 with Walmart noise contours in Table 4.7-17 shows that when compared with the cumulative year 2035 without Walmart conditions, no additional roadway segments would also exceed the City's 65 dBA CNEL residential noise standard. The noise levels from all analyzed roadway segments would range from 51.5 to 71.0 dBA CNEL.

Project Impacts

Offsite roadway noise impacts created by the proposed Walmart’s operations would be considered significant if the project would increase roadway noise levels above 65 dBA CNEL at 60 feet along a roadway segment bordered by noise-sensitive uses such as residential uses. Where the without Walmart noise level is greater than the 65 dBA CNEL, a significant noise impact would occur where the proposed Walmart would lead to a 1.5 dBA CNEL or greater increase in noise levels.

Year 2013 Conditions

The proposed Walmart’s potential offsite noise impacts have been calculated through a comparison between the year 2013 without-Walmart scenario and the year 2013 with-Walmart scenario. The results of this comparison are shown in Table 4.7-18.

Table 4.7-18: Year 2013 Traffic Noise Contributions

Roadway	Segment	dBA CNEL at 60 feet			
		No Walmart	With Walmart	Walmart Contribution	Potential Significant Impact?
Scofield Avenue	North of State Route 46	56.0	56.2	0.2	No
Scofield Avenue	South of State Route 46	60.1	60.3	0.2	No
Magnolia Avenue	North of State Route 46	47.2	48.5	1.3	No
Magnolia Avenue	South of State Route 46	50.4	51.8	1.4	No
Central Avenue	South of State Route 46	57.3	58.7	1.4	No
Beckes Street	South of State Route 46	53.2	53.6	0.4	No
Palm Avenue	North of State Route 46	58.3	59.5	1.2	No
Palm Avenue	South of State Route 46	57.7	58.6	0.9	No
Poplar Avenue	South of State Route 46	50.5	51.6	1.1	No
Griffith Avenue	North of State Route 46	53.7	54.4	0.7	No
Griffith Avenue	South of State Route 46	55.6	56.5	0.9	No
F Street North	North of State Route 46	54.2	54.6	0.4	No
State Route 43 South	South of State Route 46	60.7	61.0	0.3	No
State Route 43 North	North of State Route 46	63.0	63.1	0.1	No
J Street	South of State Route 46	62.0	62.2	0.2	No
State Route 46	West of Scofield Avenue	69.2	69.4	0.2	No
State Route 46	West of Magnolia Avenue	63.6	63.9	0.3	No
State Route 46	West of Central Avenue	63.8	64.2	0.4	No
State Route 46	East of Central Avenue	64.8	66.1	1.3	No
State Route 46	East of Palm Avenue	65.8	66.5	0.7	No

Table 4.7-18 (cont.): Model Calibration to Existing Noise Measurement Levels

Roadway	Segment	dBA CNEL at 60 feet			
		No Walmart	With Walmart	Walmart Contribution	Potential Significant Impact?
State Route 46	East of Broadway Street	65.6	66.0	0.4	No
State Route 46	East of State Route 43 South	64.6	64.8	0.2	No
Source: Michael Brandman Associates, 2011.					

Table 4.7-18 above shows that for the year 2013 conditions, noise level contributions from the proposed Walmart to the study area roadways would range from 0.1 to 1.4 dBA CNEL. In this scenario, only the roadway segment of State Route 46 east of Central Avenue would exceed 65 dB CNEL threshold, where the without Walmart conditions are within this threshold. This roadway segment is bordered by existing commercial uses and proposed commercial uses as part of the Wasco Center and no sensitive receptors exist or are proposed along this roadway segment. Therefore, a less than significant roadway noise impact is anticipated for the year 2013 conditions.

Year 2035 Conditions

The proposed Walmart's potential offsite noise impacts have been calculated through a comparison between the year 2035 without-Walmart scenario to the year 2035 with-Walmart scenario. The results of this comparison are shown in Table 4.7-19.

Table 4.7-19: Year 2035 Traffic Noise Contributions

Roadway	Segment	dBA CNEL at 60 feet			
		No Walmart	With Walmart	Walmart Contribution	Potential Significant Impact?
Scofield Avenue	North of State Route 46	57.7	57.8	0.1	No
Scofield Avenue	South of State Route 46	61.9	62.0	0.1	No
Magnolia Avenue	North of State Route 46	51.2	51.5	0.3	No
Magnolia Avenue	South of State Route 46	54.7	55.0	0.3	No
Central Avenue	South of State Route 46	61.5	61.9	0.4	No
Beckes Street	South of State Route 46	54.9	55.0	0.1	No
Palm Avenue	North of State Route 46	62.1	62.4	0.3	No
Palm Avenue	South of State Route 46	60.9	61.2	0.3	No

Table 4.7-19 (cont.): Year 2035 Traffic Noise Contributions

Roadway	Segment	dBA CNEL at 60 feet			
		No Walmart	With Walmart	Walmart Contribution	Potential Significant Impact?
Poplar Avenue	South of State Route 46	54.2	54.4	0.2	No
Griffith Avenue	North of State Route 46	56.6	56.9	0.3	No
Griffith Avenue	South of State Route 46	58.9	59.2	0.3	No
F Street North	North of State Route 46	56.4	56.6	0.2	No
State Route 43 South	South of State Route 46	62.6	62.8	0.2	No
State Route 43 North	North of State Route 46	64.4	64.5	0.1	No
J Street	South of State Route 46	63.6	63.7	0.1	No
State Route 46	West of Scofield Avenue	70.9	71.0	0.1	No
State Route 46	West of Magnolia Avenue	65.5	65.6	0.1	No
State Route 46	West of Central Avenue	66.8	67.0	0.2	No
State Route 46	East of Central Avenue	67.1	67.7	0.6	No
State Route 46	East of Palm Avenue	68.6	68.8	0.2	No
State Route 46	East of Broadway Street	67.8	67.9	0.1	No
State Route 46	East of State Route 43 South	66.2	66.3	0.1	No

Source: Michael Brandman Associates, 2011.

Table 4.7-19 above shows that for the year 2035 conditions, noise level contributions from the proposed Walmart to the study area roadways would range from 0.1 to 0.6 dBA CNEL. In this scenario, no analyzed roadway segments would exceed 65 dB CNEL, where the without Walmart conditions are within this threshold. In addition, a 0.6 dB project noise level contribution is within the 1.5 dB increase threshold for locations where the without-Walmart noise level is greater than 65 dBA CNEL. Therefore, a less than significant roadway noise impact is anticipated for the year 2035 conditions.

Operational Transportation and Stationary Noise

The proposed Walmart would generate noise from both an increase in traffic on the nearby roadway plus from stationary sources such as the rooftop mechanical equipment, trash compactors, truck loading areas, parking lot areas, drive thru speakers, and outdoor garden center.

In order for transportation and stationary noise impacts created by the proposed Walmart’s operations to be considered potentially significant, the proposed Walmart would need to increase the noise levels above 65 dBA CNEL for outdoor activity areas and 45 dBA CNEL for the interior areas of the nearby existing and proposed residential uses. Where without Walmart noise levels exceed the outdoor activity area threshold (65 dBA CNEL) or the indoor level of 45 dBA CNEL, a significant impact

would occur where the proposed Walmart would lead to an increase of 1.5 dBA CNEL at a noise sensitive land use.

The transportation and stationary exterior noise levels created by the year 2013 and 2035 scenarios were calculated for the façades of the same nearby receptors that were analyzed for the existing conditions. All onsite stationary noise sources were analyzed based on the parameters described above in Section 4.7.4, which was based on Walmart operating 24-hours per day. The results are summarized in Table 4.7-20. Exhibit 4.7-5 and Exhibit 4.7-6 shows the year 2013 without Walmart and with Walmart combined noise contours, respectively. Exhibit 4.7-7 and Exhibit 4.7-8 shows the year 2035 without Walmart and with Walmart combined noise contours, respectively.

Table 4.7-20: Transportation and Stationary Exterior Noise Levels at Nearby Sensitive Receptors

Re-ceiver ¹	Description	Year 2013 (dBA CNEL)			Year 2035 (dBA CNEL)		
		No Walmart ²	With Walmart ²	Increase	No Walmart ²	With Walmart ²	Increase
1	Single-family home to the north	47.8	47.9	0.1	48.3	48.3	0.0
2	Proposed residential to the north ³	48.3	56.8	8.5	52.2	56.5	4.3
3	Proposed residential to the east ⁴	55.1	58.7	3.6	58.4	59.4	1.0
4	Proposed residential to the east ⁴	59.9	64.1	4.2	63.5	64.7	1.2
5	Single-family home to the east	49.4	50.8	1.4	51.5	51.6	0.1
6	Single-family home to the east	54.3	55.7	1.4	57.2	57.2	0.0
7	Multi-family home to the south	62.2	63.7	1.5	66.4	66.7	0.3
8	Single-family home to the southwest	74.2	74.7	0.5	77.2	77.2	0.0
9	Single-family home to the southwest	69.7	70.0	0.3	72.2	72.2	0.0
10	Single-family home to the west	55.4	56.4	1.0	58.8	58.8	0.0
11	Single-family home to the west	47.9	49.0	1.1	50.9	50.9	0.0
12	Single-family home to the northwest	52.9	54.1	1.2	56.6	56.6	0.0

Notes:

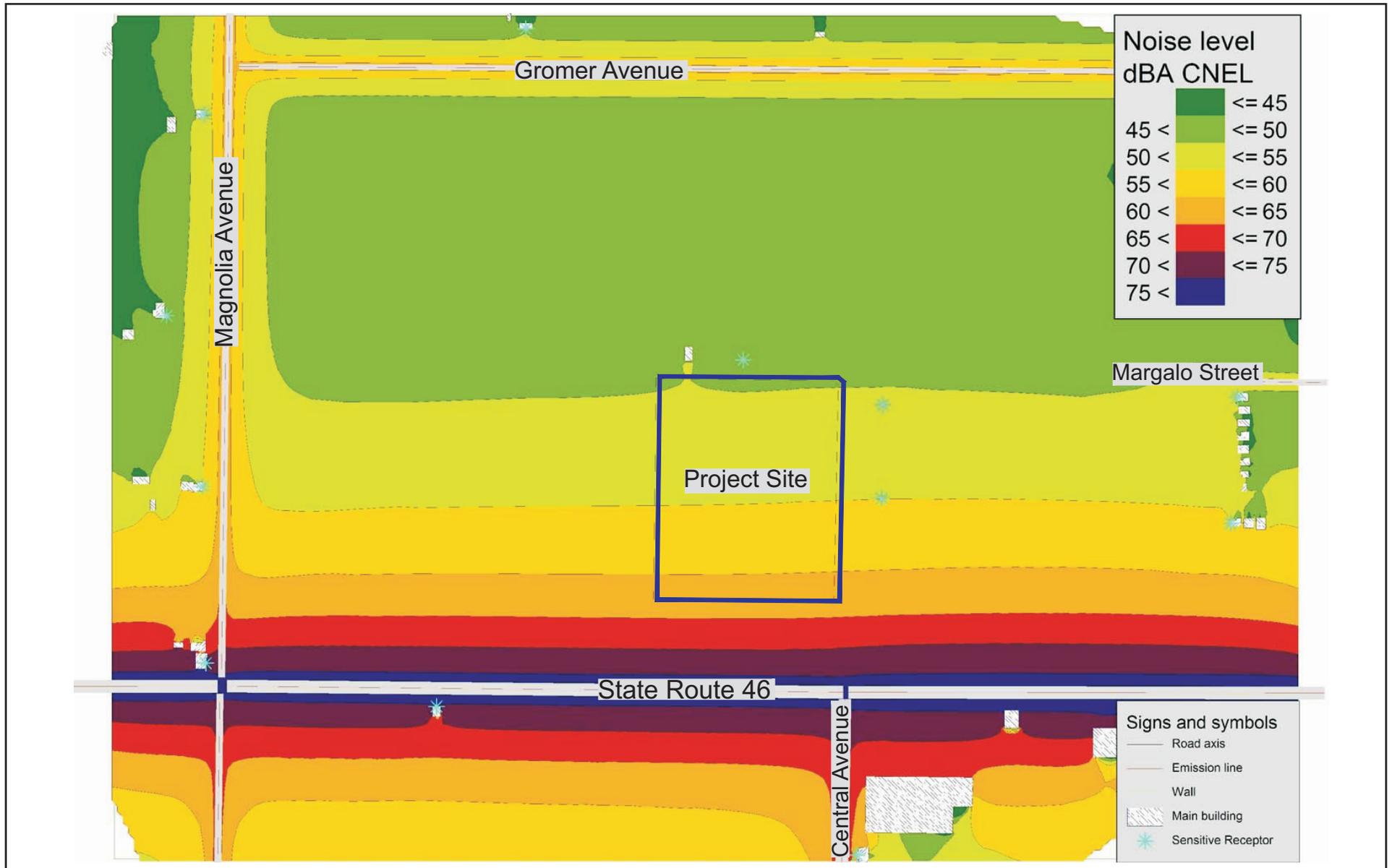
¹ Location of Receivers shown on Exhibit 4.7-8.

² See Appendix I.

³ Located 80 feet north of the property line to account for a 60 foot right-of-way for Margalo Street and a 20 ft setback.

⁴ Located at nearest point of proposed Wasco Center multi-family residential structure and worst-case noise of either first or second floor.

Source: Michael Brandman Associates, 2011.



Source: SoundPlan Version 7.0.

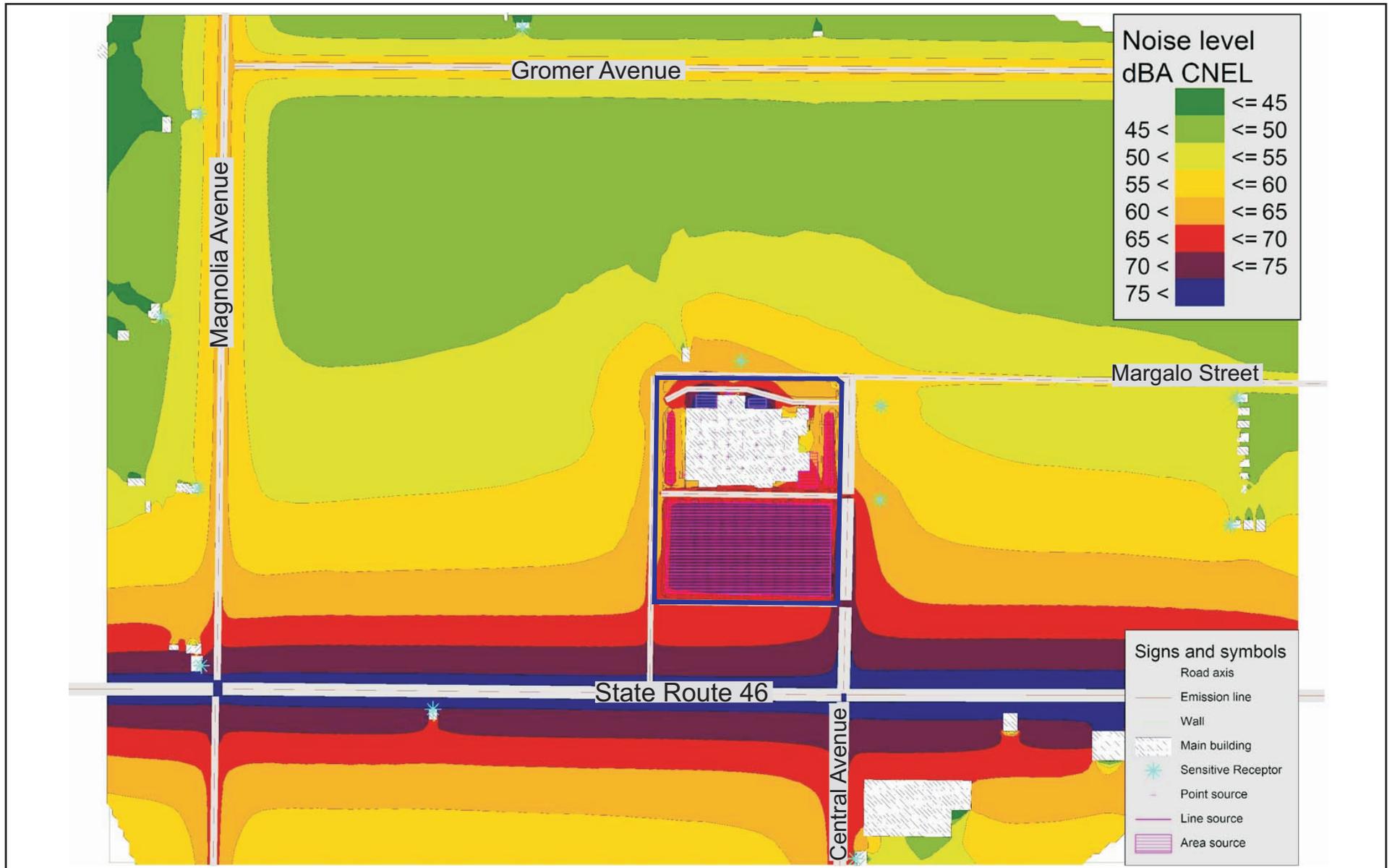


Michael Brandman Associates

26190011 • 05/2011 | 4.7-5_year2013_wo_proj_noise_contour.cdr

Exhibit 4.7-5 Year 2013 Without Project Noise Contour Map (dBA CNEL)

WASCO CENTER WALMART • CITY OF WASCO



Source: SoundPlan Version 7.0.

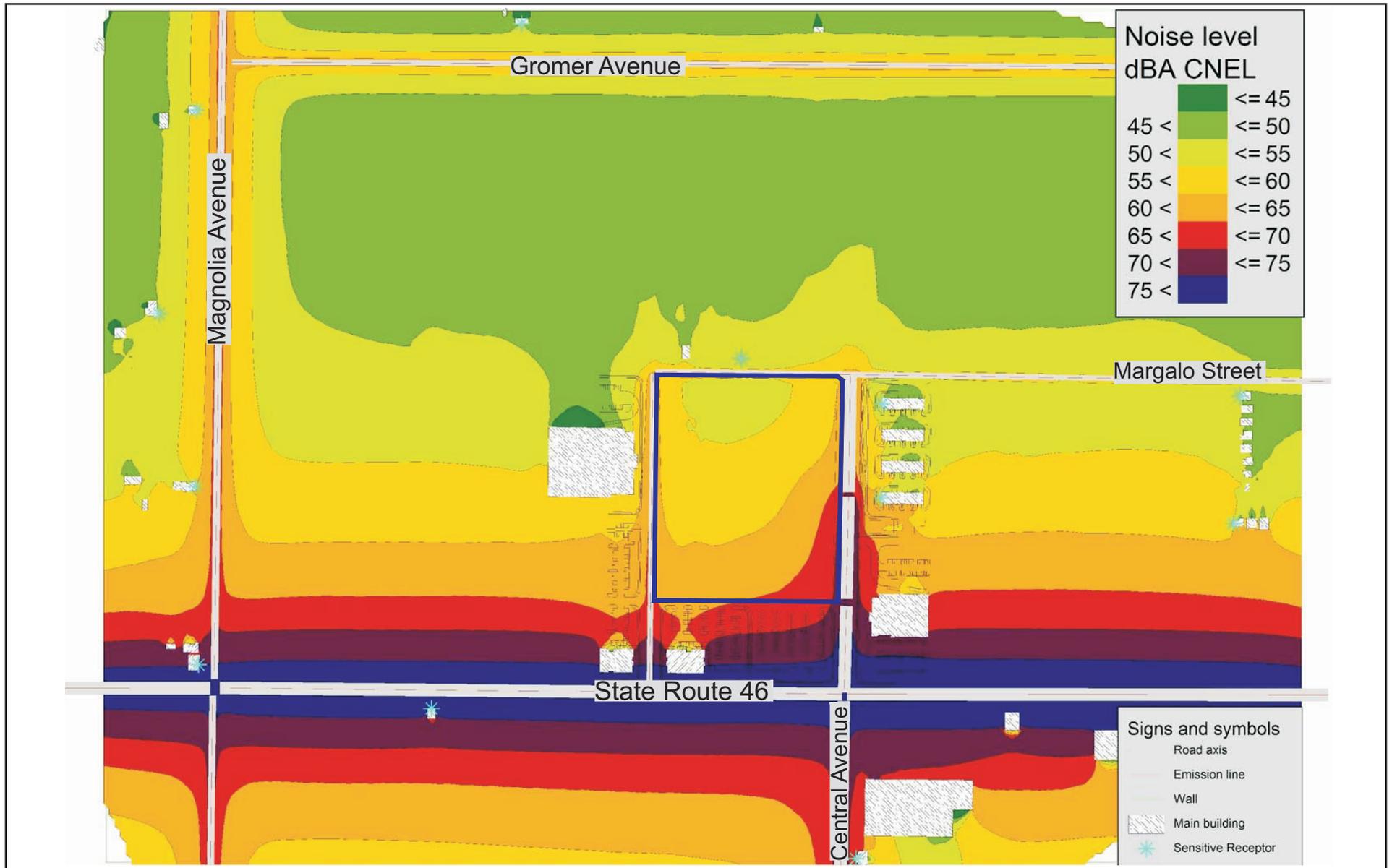


Michael Brandman Associates

26190011 • 05/2011 | 4.7-6_year2013_w_proj_noise_contour.cdr

Exhibit 4.7-6 Year 2013 With Project Noise Contour Map (dBA CNEL)

WASCO CENTER WALMART • CITY OF WASCO



Source: SoundPlan Version 7.0.

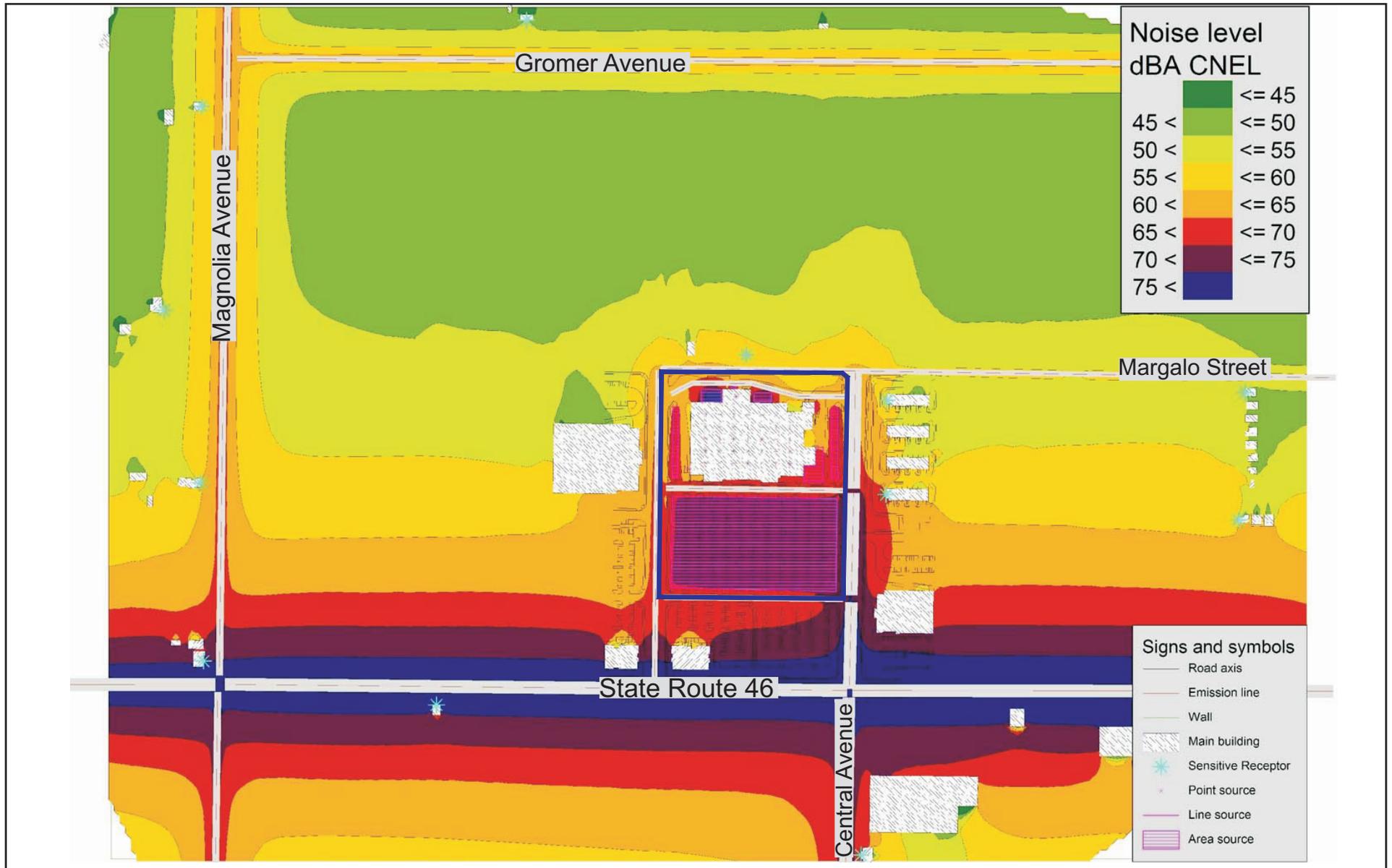


Michael Brandman Associates

26190011 • 05/2011 | 4.7-7_year2035_wo_proj_noise_contour.cdr

Exhibit 4.7-7 Year 2035 Without Project Noise Contour Map (dBA CNEL)

WASCO CENTER WALMART • CITY OF WASCO



Source: SoundPlan Version 7.0.



Michael Brandman Associates

26190011 • 05/2011 | 4.7-8_year2035_w_proj_noise_contour.cdr

Exhibit 4.7-8 Year 2035 With Project Noise Contour Map (dBA CNEL)

WASCO CENTER WALMART • CITY OF WASCO

Table 4.7-20 shows that for both the with Walmart year 2013 and year 2035 transportation and stationary exterior noise conditions, no sensitive receptors would exceed the City’s exterior noise threshold of 65 dBA CNEL, where the without Walmart noise levels would be below this threshold. In addition, the proposed Walmart would not increase the noise by 1.5 dB or greater at any sensitive receptor that already exceeds the 65 dBA CNEL standard.

The interior noise levels at the nearby residential units from the transportation and stationary noise sources were also analyzed based on the year 2013 and year 2035 with Walmart conditions described above. Field observations of the most noise impacted nearby homes showed that they all had mechanical ventilation systems, which allows for the occupants to be comfortable at any time with all windows closed. In addition, some of the nearby residential units have been recently constructed (i.e., Receivers 2, 3, 4, 5, 6, and 7) while other residential units are many years old (i.e., 1, 8, 9, 10, 11, and 12). For the purpose of this analysis, the recently constructed homes are assumed to have a minimum exterior to interior attenuation rate of 25 dB because dual-paned windows are typically used to meet the current Title 24 Building Standards. The older residential units are assumed to have a minimum exterior to interior attenuation rate of 20 dB. Table 4.7-21 shows the anticipated interior noise levels based on an attenuation rate of 20 dB for older residential units and 25 dB for recently constructed residential units.

Table 4.7-21: Transportation and Stationary Interior Noise Impacts at Nearby Residential Units

Receiver ¹	Description	Year 2013 With Walmart (dBA CNEL)		Year 2035 With Walmart (dBA CNEL)	
		Exterior Noise	Interior Noise	Exterior Noise	Interior Noise
1	Single-family home to the north	47.9	27.9 ²	48.3	28.3 ²
2	Proposed residential to the north ⁴	56.8	31.8 ³	52.2	27.2 ³
3	Proposed residential to the east ⁵	58.7	33.7 ³	58.4	33.4 ³
4	Proposed residential to the east ⁵	64.1	39. ³ 1	63.5	38.5 ³
5	Single-family home to the east	50.8	25.8 ³	51.6	26.6 ³
6	Single-family home to the east	55.7	30.7 ³	57.2	32.2 ³
7	Multi-family home to the south	63.7	38.7 ³	66.7	41.7 ³
8	Single-family home to the southwest	74.7	54.7 ²	77.2	57.2 ²
9	Single-family home to the southwest	70.0	50.0 ²	72.2	52.2 ²
10	Single-family home to the west	56.4	36.4 ²	58.8	38.8 ²
11	Single-family home to the west	49.0	29.0 ²	50.9	30.9 ²
12	Single-family home to the northwest	54.1	34.1 ²	56.6	36.6 ²
City of Wasco Residential Interior Noise Threshold		—	45 ⁴⁵	—	45

Table 4.7-21 (cont.): Transportation and Stationary Interior Noise Impacts at Nearby Residential Units

Receiver ¹	Description	Year 2013 With Walmart (dBA CNEL)		Year 2035 With Walmart (dBA CNEL)	
		Exterior Noise	Interior Noise	Exterior Noise	Interior Noise
Notes:					
¹ Location of Receivers shown on Exhibit 4.7-8.					
² Interior noise level based on a 20 dB exterior to interior attenuation rate because the residential unit is many years old.					
³ Interior noise level based on a 25 dB exterior to interior attenuation rate because the residential unit was recently constructed and dual-paned windows are typically used to meet the current Title 24 Building Standards.					
⁴ Located 80 feet north of the property line to account for a 60 foot right-of-way for Margalo Street and a 20 foot setback.					
⁵ Located at nearest point of proposed Wasco Center multi-family residential structure and worst-case noise of either first or second floor.					
Source: SoundPlan Version 7.0; Michael Brandman Associates, 2011.					

Table 4.7-21 shows that for both the year 2013 and year 2035 with Walmart conditions, only Receivers 8 and 9 would exceed the City's residential interior noise standard of 45 dB CNEL. According to Table 4.7-20 above, the Walmart contribution to Receivers 8 and 9 for the year 2013 is 0.5 dB and 0.3 dB, respectively. These interior noise level increases are less than 1.5 dB, and therefore, are considered less than significant. The Walmart contribution to Receivers 8 and 9 for the year 2035 is 0.0 dB for both. Therefore, the proposed Walmart would not contribute to interior noise levels at Receivers 8 and 9 for the year 2035. The proposed Walmart would result in a less than significant impact to interior noise levels for the year 2013 and year 2035.

Cumulative Impact Analysis

The cumulative impacts associated with possible simultaneous construction and operations of the proposed Walmart and the remainder of the Wasco Center have been analyzed below.

Construction

Construction activities associated with the proposed Walmart may be simultaneous with construction activities associated with the Wasco Center, and as a result may result in a cumulative increase in construction noise levels. As described previously, construction noise levels associated with the proposed Walmart could be significant if the residential areas north and east of the site are constructed and occupied prior to the completion of the construction of the proposed Walmart. Since the proposed Walmart could result in a significant noise impact, it could also contribute to a significant cumulative noise impact.

Operational Roadway Noise

In order for the proposed Walmart to create a cumulative considerable impact, the proposed Walmart's portion of the cumulative increase in noise would need to increase the noise levels above 65 dB CNEL for outdoor activity areas at the nearby sensitive receptors where the cumulative without Walmart noise levels do not already exceed this exterior standard or contribute a 1.5 dB or greater

noise increase to a sensitive receptor that already exceeds the 65 dB CNEL exterior noise standard. The cumulative roadway noise impacts have been calculated for the year 2013 and year 2035 scenarios.

Year 2013

The year 2013 cumulative roadway noise impacts were calculated by comparing the year 2013 with Walmart noise levels to the existing scenario and the results are shown below in Table 4.7-22.

Table 4.7-22: Year 2013 Cumulative Traffic Noise Contributions

Roadway	Segment	dBA CNEL at 60 feet				Potential Significant Impact?
		Existing	Year 2013 With Walmart	Cumulative Contribution	Walmart Contribution ¹	
Scofield Avenue	North of State Route 46	55.8	56.2	0.4	0.2	No
Scofield Avenue	South of State Route 46	59.9	60.3	0.5	0.2	No
Magnolia Avenue	North of State Route 46	46.8	48.5	1.6	1.3	No
Magnolia Avenue	South of State Route 46	50.2	51.8	1.6	1.4	No
Central Avenue	South of State Route 46	57.1	58.7	1.6	1.4	No
Beckes Street	South of State Route 46	53.1	53.6	0.5	0.4	No
Palm Avenue	North of State Route 46	58.1	59.5	1.4	1.2	No
Palm Avenue	South of State Route 46	57.5	58.6	1.0	0.9	No
Poplar Avenue	South of State Route 46	50.4	51.6	1.2	1.1	No
Griffith Avenue	North of State Route 46	53.3	54.4	1.1	0.7	No
Griffith Avenue	South of State Route 46	55.4	56.5	1.1	0.9	No
F Street North	North of State Route 46	54.0	54.6	0.6	0.4	No
State Route 43 South	South of State Route 46	60.5	61.0	0.5	0.3	No
State Route 43 North	North of State Route 46	62.8	63.1	0.3	0.1	No
J Street	South of State Route 46	61.8	62.2	0.4	0.2	No

Table 4.7-22 (cont.): Year 2013 Cumulative Traffic Noise Contributions

Roadway	Segment	dBA CNEL at 60 feet				
		Existing	Year 2013 With Walmart	Cumulative Contribution	Walmart Contribution ¹	Potential Significant Impact?
State Route 46	West of Scofield Avenue	69.0	69.4	0.4	0.2	No
State Route 46	West of Magnolia Avenue	63.4	63.9	0.5	0.3	No
State Route 46	West of Central Avenue	63.6	64.2	0.6	0.4	No
State Route 46	East of Central Avenue	64.5	66.1	1.5	1.3	Yes
State Route 46	East of Palm Avenue	65.5	66.5	0.9	0.7	No
State Route 46	East of Broadway Street	65.4	66.0	0.6	0.4	No
State Route 46	East of State Route 43 South	64.4	64.8	0.4	0.2	No

Notes:
¹ The Walmart contribution was previously calculated above in Table 4.7-18.
Source: Michael Brandman Associates, 2011.

Table 4.7-22 above shows that for the year 2013 conditions, cumulative noise level increases would range from 0.3 dB to 1.6 dB, and the contribution to the noise levels from the proposed Walmart to the study area roadways would range from 0.1 to 1.4 dBA. In this scenario, the existing noise level along the roadway segment of State Route 46 east of Central Avenue does not exceed the exterior noise threshold of 65 dB and the Walmart's contribution of 1.3 dB to cumulative noise would cause the exterior noise level under the cumulative without Walmart scenario of 64.7 dB to increase to 66.1 dB and exceed the 65 dB CNEL threshold. This roadway segment is bordered by existing commercial uses and proposed commercial uses as part of the Wasco Center and no sensitive receptors exist or are proposed along this roadway segment. Under the cumulative without Walmart scenario, three roadway segments along SR-46 would exceed the 65 dB threshold (west of Scofield Avenue, east of Palm Avenue, and east of Broadway Street). The proposed Walmart would contribute a range of 0.2 dB to 0.7 dB at these three roadway segments. Because these noise levels are less than 1.5 dB, the proposed Walmart would contribute noise levels along these three roadway segments that are considered less than cumulatively considerable, and thus a less than significant cumulative roadway noise impact for the year 2013 conditions would occur.

Year 2035

The year 2035 cumulative roadway noise impacts were calculated by comparing the year 2035 with Walmart noise levels to the existing scenario and the results are shown below in Table 4.7-23.

Table 4.7-23: Year 2035 Cumulative Traffic Noise Contributions

Roadway	Segment	dBA CNEL at 60 feet				Potential Significant Impact?
		Existing	Year 2035 With Walmart	Cumulative Contribution	Walmart Contribution ¹	
Scofield Avenue	North of State Route 46	55.8	57.8	2.1	0.1	No
Scofield Avenue	South of State Route 46	59.9	62.0	2.2	0.1	No
Magnolia Avenue	North of State Route 46	46.8	51.5	4.6	0.3	No
Magnolia Avenue	South of State Route 46	50.2	55.0	4.8	0.3	No
Central Avenue	South of State Route 46	57.1	61.9	4.8	0.4	No
Beckes Street	South of State Route 46	53.1	55.0	2.0	0.1	No
Palm Avenue	North of State Route 46	58.1	62.4	4.3	0.3	No
Palm Avenue	South of State Route 46	57.5	61.2	3.6	0.3	No
Poplar Avenue	South of State Route 46	50.4	54.4	4.1	0.2	No
Griffith Avenue	North of State Route 46	53.3	56.9	3.5	0.3	No
Griffith Avenue	South of State Route 46	55.4	59.2	3.8	0.3	No
F Street North	North of State Route 46	54.0	56.6	2.5	0.2	No
State Route 43 South	South of State Route 46	60.5	62.8	2.3	0.2	No
State Route 43 North	North of State Route 46	62.8	64.5	1.7	0.1	No
J Street	South of State Route 46	61.8	63.7	1.9	0.1	No
State Route 46	West of Scofield Avenue	69.0	71.0	2.0	0.1	No
State Route 46	West of Magnolia Avenue	63.4	65.6	2.2	0.1	No
State Route 46	West of Central Avenue	63.6	67.0	3.4	0.2	No
State Route 46	East of Central Avenue	64.5	67.7	3.2	0.6	Yes

Table 4.7-23 (cont.): Year 2035 Cumulative Traffic Noise Contributions

Roadway	Segment	dBA CNEL at 60 feet				
		Existing	Year 2035 With Walmart	Cumulative Contribution	Walmart Contribution ¹	Potential Significant Impact?
State Route 46	East of Palm Avenue	65.5	68.8	3.3	0.2	No
State Route 46	East of Broadway Street	65.4	67.9	2.6	0.1	No
State Route 46	East of State Route 43 South	64.4	66.3	1.9	0.1	No

Notes:
¹ The Walmart contribution was previously calculated above in Table 4.7-19.
Source: Michael Brandman Associates, 2011.

Table 4.7-23 above shows that for the year 2035 conditions, cumulative noise level increase would range from 1.7 dB to 4.8 dB, and the contributions to the noise levels from the proposed Walmart to the study area roadways would range from 0.1 to 0.6 dBA CNEL. Under the cumulative without Walmart scenario, seven roadway segments along SR-46 would exceed the 65 dB threshold (west of Scofield Avenue, west of Magnolia Avenue, west of Central Avenue, east of Central Avenue, east of Palm Avenue, east of Broadway Street, and east of SR-43 South). The proposed Walmart would contribute a range of 0.1 dB to 0.6 dB at these seven roadway segments. Because these noise levels are less than 1.5 dB, the proposed Walmart would contribute noise levels along these seven roadway segments that are considered less than cumulatively considerable, and thus a less than significant cumulative roadway noise impact for the year 2035 conditions would occur.

Operational Transportation and Stationary Noise

In order to determine the cumulative transportation plus stationary noise impacts, the noise levels created by the year 2013 and year 2035 scenarios were calculated for the façades of the same nearby receptors that were analyzed for the existing conditions. The results are summarized in ~~Table 4.7-20~~ [Table 4.7-24](#).

Table 4.7-24: Cumulative Transportation and Stationary Exterior Noise Levels at Nearby Sensitive Receptors

Receiver ¹	Description	Year 2013 (dBA CNEL)			Year 2035 (dBA CNEL)		
		Existing	Cumulative With Walmart	Increase (Cumulative /Walmart) ²	Existing	Cumulative With Walmart	Increase (Cumulative /Walmart) ²
1	Single-family home to the north	47.7	47.9	0.2/0.1	47.7	48.3	0.6/0.0
2	Proposed residential to the north ³	48.8	56.8	8.0/8.5	48.8	56.5	7.7/4.3
3	Proposed residential to the east ⁴	54.9	58.7	3.8/3.6	54.9	59.4	4.5/1.0
4	Proposed residential to the east ⁴	59.7	64.1	4.4/4.2	59.7	64.7	5.0/1.2
5	Single-family home to the east	49.2	50.8	1.6/1.4	49.2	51.6	2.4/0.1
6	Single-family home to the east	54.1	55.7	1.6/1.4	54.1	57.2	3.1/0.0
7	Multi-family home to the south	62.0	63.7	1.7/1.5	62.0	66.7	4.7/0.3
8	Single-family home to the southwest	74.0	74.7	0.7/0.5	74.0	77.2	3.2/0.0
9	Single-family home to the southwest	69.4	70.0	0.6/0.3	69.4	72.2	2.8/0.0
10	Single-family home to the west	55.0	56.4	1.4/1.0	55.0	58.8	3.8/0.0
11	Single-family home to the west	47.6	49.0	1.4/1.1	47.6	50.9	3.3/0.0
12	Single-family home to the northwest	52.5	54.1	1.6/1.2	52.5	56.6	4.1/0.0

Notes:

¹ Location of Receivers shown on Exhibit 4.7-8.

² Cumulative increase calculated from the difference between cumulative with Walmart to existing. Walmart's increase was obtained from Table 4.7-20, which calculated the difference between cumulative year 2013 or 2035 with Walmart and year 2013 or 2035 without Walmart.

³ Located 80 feet north of the property line to account for a 60 foot right-of-way for Margalo Street and a 20 foot setback.

⁴ Located at nearest point of proposed Wasco Center multi-family residential structure and worst-case noise of either first or second floor.

Source: Michael Brandman Associates, 2011.

~~Table 4.7-20~~ [Table 4.7-24](#) shows that only Receiver 7 for the cumulative year 2035 conditions would exceed 65 dB CNEL threshold, where the existing conditions are within this threshold. However, the

exceedance of the 65 dB CNEL standard at Receiver 7 would occur with or without the Walmart's contribution of 0.3 dB. Therefore, the proposed Walmart would not cause a cumulative noise impact at Receiver 7. In addition, Receivers 8 and 9 for the cumulative year 2035 conditions would exceed 1.5 dB increase threshold for receptors that already exceed the 65 dBA CNEL standard. However, the Walmart's contribution to the cumulative noise increases at Receivers 8 and 9 is 0.0 dB for the year 2035 conditions. Therefore, the proposed Walmart would not contribute to the cumulative exceedances at Receivers 8 and 9. This would be considered a less than significant impact.

The cumulative interior noise levels at the nearby residential units from the transportation and stationary noise sources were also analyzed based on the year 2013 and year 2035 with Walmart conditions described above. As stated previously, field observations of the most noise impacted nearby homes showed that they all had mechanical ventilation systems, which allows for the occupants to be comfortable at any time with all windows closed. In addition, some of the nearby residential units have been recently constructed (i.e., Receivers 2, 3, 4, 5, 6, and 7) while other residential units are many years old (i.e., 1, 8, 9, 10, 11, and 12). For the purpose of this analysis, the recently constructed homes are assumed to have a minimum exterior to interior attenuation rate of 25 dB because dual-paned windows are typically used to meet the current Title 24 Building Standards. The older residential units are assumed to have a minimum exterior to interior attenuation rate of 20 dB. ~~Table 4.7-24~~ [Table 4.7-25](#) shows the anticipated cumulative interior noise levels based on an attenuation rate of 20 dB for older residential units and 25 dB for recently constructed residential units.

Table 4.7-25: Cumulative Transportation and Stationary Interior Noise Impacts at Nearby Residential Units

Receiver ¹	Description	Existing Exterior Noise	Existing Interior Noise	Year 2013 Cumulative With Walmart Interior Noise ²	Year 2035 Cumulative With Walmart Interior Noise ²
1	Single-family home to the north	47.7	27.7 ³	27.9	23.3
2	Proposed residential to the north ⁵	48.8	31.8 ⁴	31.8	27.2
3	Proposed residential to the east ⁶	54.9	33.7 ⁴	33.7	33.4
4	Proposed residential to the east ⁶	59.7	39.4 ¹	39.1	38.5
5	Single-family home to the east	49.2	25.8 ⁴	25.8	26.6
6	Single-family home to the east	54.1	30.7 ⁴	30.7	32.2
7	Multi-family home to the south	62.0	38.7 ⁴	38.7	41.7
8	Single-family home to the southwest	74.0	54.0 ³	54.7	57.2
9	Single-family home to the southwest	69.4	49.4 ³	50.0	52.2
10	Single-family home to the west	55.0	35.0 ³	36.4	38.8

Table 4.7-25 (cont.): Cumulative Transportation and Stationary Interior Noise Impacts at Nearby Residential Units

Receiver ¹	Description	Existing Exterior Noise	Existing Interior Noise	Year 2013 Cumulative With Walmart Interior Noise ²	Year 2035 Cumulative With Walmart Interior Noise ²
11	Single-family home to the west	47.6	27.6 ³	29.0	30.9
12	Single-family home to the northwest	52.5	32.5 ³	34.1	36.6
City of Wasco Residential Interior Noise Threshold		—	45	—	45

Notes:

- ¹ Location of Receivers shown on Exhibit 4.7-8.
- ² Year 2013 and Year 2035 interior noise levels are provided in Table 4.7-21.
- ³ Interior noise level based on a 20 dB exterior to interior attenuation rate because the residential unit is many years old.
- ⁴ Interior noise level based on a 25 dB exterior to interior attenuation rate because the residential unit was recently constructed and dual-paned windows are typically used to meet the current Title 24 Building Standards.
- ⁵ Located 80 feet north of the property line to account for a 60 foot right-of-way for Margalo Street and a 20 foot setback.
- ⁶ Located at nearest point of proposed Wasco Center multi-family residential structure and worst-case noise of either first or second floor.

Source: Michael Brandman Associates, 2011.

~~Table 4.7-21~~ [Table 4.7-25](#) shows that for both the year 2013 and year 2035 with Walmart conditions, the cumulative interior noise levels at only Receivers 8 and 9 for the years 2013 and 2035 conditions would exceed 45 dB CNEL. The cumulative year 2013 interior noise increase over existing interior noise levels is 0.7 dB (54.7 dB – 54.0 dB) for Receiver 8 and 0.6 dB (50.0 dB – 49.4 dB) for Receiver 9. These interior noise level increases are less than 1.5 dB, and therefore, the cumulative year 2013 interior noise increase is considered less than significant. The cumulative year 2035 interior noise increase over existing interior noise levels is 3.2 dB (57.2 dB – 54.0 dB) for Receiver 8 and 2.8 dB (52.2 dB – 49.4 dB) for Receiver 9. These interior noise level increase are greater than 1.5 dB and considered significant. However, as shown in Table 4.7-20, the Walmart contribution to Receivers 8 and 9 for the year 2035 is 0.0 dB and therefore, would not contribute to cumulative interior noise increases at either Receiver 8 or 9 in the year 2035. As a result, the proposed Walmart would result in a less than significant contribution to cumulative interior noise levels.

Mitigation Measures

The proposed Walmart consist of 170,000 square feet and will replace the 158,000 square-foot “Large-Box Retail” use that was approved as part of the Wasco Center Specific Development Plan. The proposed project includes the addition of 12,000 square feet to the approved structure and a change to a 24-hour Walmart use. The following mitigation measures are separated into two categories: one category includes a mitigation measure that is the same as required for the approved Wasco Center, and the second category includes a new mitigation measure that was not required with

the approved Wasco Center. In addition to the two mitigation measures identified below, the project applicant will comply with the City of Wasco Municipal Code regarding construction noise similar to the approved Wasco Center. All construction equipment activities will occur between the hours of 7:00 AM and 7:00 PM Monday through Friday and 9:00 AM and 6:00 PM on weekends.

Project Specific

Mitigation Measure that is the same as Identified for the Wasco Center

MM N-1a All construction equipment shall be properly maintained with operating mufflers and air intake silencers.

New Mitigation Measure that is not Identified for the Wasco Center

MM N-1b The project applicant shall require that prior to commencement of grading activities, a temporary 14-foot high construction noise barrier shall be installed on the portions of the property line of the project site that are within 300 feet of any constructed and occupied residential structure. If the properties proposed for residential or zoned for residential use (i.e., north and adjacent to Margalo Street and east and adjacent to Central Avenue) are not constructed and occupied prior to the completion of construction activities on the project site, this measure is not required. If residential uses are constructed and occupied, this measure is required. The temporary noise barrier shall consist of a material that provides attenuation of at least 15 dB. This can be achieved through the use of half-inch plywood.

Cumulative

No additional mitigation measures are required.

Level of Significance After Mitigation

Project Specific

Less than significant impact.

Cumulative

Less than significant impact.

Permanent Increase in Ambient Noise Levels

Impact N-2: **The proposed Walmart would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the proposed Walmart.**

Project Specific Impact Analysis

This impact discussion analyzes the potential for a substantial permanent increase in ambient noise levels in the project vicinity associated with operation of the proposed Walmart, including impacts related to offsite vehicular noise and exposure of neighboring land uses to transportation and stationary noise.

In order for operational noise to be considered significant, the noise level would need to increase the noise levels above 65 dB CNEL at the boundary areas of planned or zoned noise sensitive uses. For nearby residential uses that already exceed these standards, a significant impact would occur where the proposed Walmart would lead to an increase at a noise-sensitive land use by 1.5 dBA CNEL, where the without-Walmart noise level is greater than 65 dBA CNEL.

Operational Roadway Noise

The proposed Walmart would generate additional vehicular trips on roadways in the project vicinity. Noise from motor vehicles is generated by engine vibrations, the interaction between tires and the road, and the exhaust system. The potential offsite noise impacts caused by the increase in vehicular traffic from the ongoing operations from the proposed Walmart onto the project study area roadways have been analyzed above for both the year 2013 and year 2035 conditions.

Year 2013 Conditions

The proposed Walmart's potential offsite noise impacts have been calculated above through a comparison between the year 2013 without-Walmart scenario and the year 2013 with-Walmart scenario. Table 4.7-18 above shows that for the year 2013 conditions, noise level contributions from the proposed Walmart to the study area roadways would range from 0.1 to 1.4 dBA CNEL. In this scenario, only the roadway segment of State Route 46 east of Central Avenue would exceed 65 dB CNEL threshold, where the without Walmart conditions are within this threshold. This roadway segment is bordered by existing commercial uses and proposed commercial uses as part of the Wasco Center and no sensitive receptors exist or are proposed along this roadway segment. Therefore, a less than significant roadway noise impact is anticipated for the year 2013 conditions.

Year 2035 Conditions

The proposed Walmart's potential offsite noise impacts have been calculated above through a comparison between the year 2035 without-Walmart scenario to the year 2035 with-Walmart scenario. Table 4.7-19 above shows that for the year 2035 conditions, noise level contributions from the proposed Walmart to the study area roadways would range from 0.1 to 0.6 dBA CNEL. In this scenario, no analyzed roadway segments would exceed 65 dB CNEL, where the without Walmart conditions are within this threshold. In addition, a 0.6 dB Walmart noise level contribution is within the 1.5 dB increase threshold for locations where the without-Walmart noise level is greater than 65 dBA CNEL. Therefore, a less than significant roadway noise impact is anticipated for the year 2035 conditions.

Operational Transportation and Stationary Noise

The proposed Walmart would generate noise from both an increase in traffic on the nearby roadway plus from stationary sources such as the rooftop mechanical equipment, trash compactors, truck loading areas, parking lot areas, drive thru speakers, and outdoor garden center.

As discussed in Impact N-1, and as shown above in Table 4.7-20, for both the with Walmart year 2013 and year 2035 transportation and stationary exterior noise conditions, no sensitive receptors would exceed the City's noise threshold of 65 dBA CNEL, where the without Walmart noise levels would be below this threshold. In addition, the proposed Walmart would not increase the noise by 1.5 dB or greater at any sensitive receptor that already exceeds the 65 dBA CNEL standard. In addition, Table 4.7-21 shows that for both the year 2013 and year 2035 with Walmart conditions, only Receivers 8 and 9 would exceed the City's residential interior noise standard of 45 dB CNEL. According to Table 4.7-20 above, the Walmart contribution to Receivers 8 and 9 for the year 2013 is 0.5 dB and 0.3 dB, respectively. These interior noise level increases are less than 1.5 dB, and therefore, are considered less than significant. The Walmart contribution to Receivers 8 and 9 for the year 2035 is 0.0 dB for both as shown in Table 4.7-21. Therefore, the proposed Walmart would not contribute to interior noise levels at Receivers 8 and 9 for the year 2035. The proposed Walmart would result in a less than significant impact to interior noise levels for the year 2013 and year 2035.

Cumulative Impact Analysis

In order for the proposed Walmart to create a cumulative considerable impact, the proposed Walmart's portion of the cumulative increase in noise would need to (1) increase the noise levels above 65 dB CNEL for outdoor activity areas at the nearby sensitive receptors where the cumulative without Walmart noise levels do not already exceed this standard or (2) contribute a 1.5 dB or greater noise increase to a sensitive receptor that already exceeds the 65 dB CNEL standard.

Operational Roadway Noise

The cumulative roadway noise impacts have been calculated above for the year 2013 and year 2035 scenarios.

Year 2013

The year 2013 cumulative roadway noise impacts were calculated above by comparing the year 2013 with Walmart noise levels to the existing scenario and the results are shown above in Table 4.7-22. Table 4.7-22 above shows that for the year 2013 conditions, cumulative noise level increases would range from 0.3 dB to 1.6 dB, and the contribution to the noise levels from the proposed Walmart to the study area roadways would range from 0.1 to 1.4 dBA. In this scenario, the existing noise level along the roadway segment of State Route 46 east of Central Avenue does not exceed the exterior noise threshold of 65 dB and the Walmart's contribution of 1.3 dB to cumulative noise would cause the exterior noise level under the cumulative without Walmart scenario of 64.7 dB to increase to 66.1 dB and exceed the 65 dB CNEL threshold. This roadway segment is bordered by existing commercial uses and proposed commercial uses as part of the Wasco Center and no sensitive receptors exist or are proposed along this roadway segment. Under the cumulative without Walmart scenario, three roadway segments along SR-46 would exceed the 65 dB threshold (west of Scofield Avenue, east of Palm Avenue, and east of Broadway Street). The proposed Walmart would contribute a range of 0.2 dB to 0.7 dB at these three roadway segments. Because these noise levels are less than 1.5 dB, the proposed Walmart would contribute noise levels along these three roadway

segments that are considered less than cumulatively considerable, and thus a less than significant cumulative roadway noise impact for the year 2013 conditions would occur.

Year 2035

The year 2035 cumulative roadway noise impacts were calculated by comparing the year 2035 with Walmart noise levels to the existing scenario and the results are shown above in Table 4.7-23. Table 4.7-23 shows that for the year 2035 conditions, cumulative noise level increase would range from 1.7 dB to 4.8 dB, and the contributions to the noise levels from the proposed Walmart to the study area roadways would range from 0.1 to 0.6 dBA CNEL. Under the cumulative without Walmart scenario, seven roadway segments along SR-46 would exceed the 65 dB threshold (west of Scofield Avenue, west of Magnolia Avenue, west of Central Avenue, east of Central Avenue, east of Palm Avenue, east of Broadway Street, and east of SR-43 South). The proposed Walmart would contribute a range of 0.1 dB to 0.6 dB at these seven roadway segments. Because these noise levels are less than 1.5 dB, the proposed Walmart would contribute noise levels along these seven roadway segments that are considered less than cumulatively considerable, and thus a less than significant cumulative roadway noise impact for the year 2035 conditions would occur.

Operational Transportation and Stationary Noise

In order to determine the cumulative transportation plus stationary noise impacts the noise levels created by the year 2013 and year 2035 scenarios were calculated for the façades of the same nearby receptors that were analyzed for the existing conditions. The results are summarized above in Table 4.7-20. Table 4.7-20 shows that only Receiver 7 for the cumulative year 2035 conditions would exceed 65 dB CNEL threshold, where the existing conditions are within this threshold. However, the exceedance of the 65 dB CNEL standard at Receiver 7 would occur with or without the Walmart's contribution of 0.3 dB. Therefore, the proposed Walmart would not cause a cumulative noise impact at Receiver 7. In addition, Receivers 8 and 9 for the cumulative year 2035 conditions would exceed 1.5 dB increase threshold for receptors that already exceed the 65 dBA CNEL standard. However, the Walmart's contribution to the cumulative noise increases at Receivers 8 and 9 is 0.0 dB for the year 2035 conditions. Therefore, the proposed Walmart would not contribute to the cumulative exceedances at Receivers 8 and 9. This would be considered a less than significant impact.

Mitigation Measures

Project Specific

No mitigation measures are required.

Cumulative

No mitigation measures are required.

Level of Significance After Mitigation

Project Specific

Less than significant impact.

Cumulative

Less than significant impact.

Temporary or Periodic Increase in Ambient Noise Levels

Impact N-3: **The proposed Walmart would not result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the Walmart.**

Project Specific Impact Analysis

This impact discussion analyzes the potential for Walmart construction noise to cause a substantial temporary increase in ambient noise levels in the project vicinity above noise levels existing without the proposed Walmart.

Since the City does not provide any thresholds specific to construction noise, the City's transportation noise thresholds have been utilized to provide a conservative analysis, which consist of 65 dB CNEL or less at exterior areas and 45 dB CNEL or less at interior areas of any nearby residential uses. For nearby residential uses that already exceed these standards, a significant noise impact would occur if the Walmart would increase noise levels by 1.5 dB or more where the without Walmart noise level is greater than 65 dBA CNEL.

Noise impacts from construction activities associated with the proposed Walmart would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities. The construction activities for the proposed Walmart is anticipated to include grading of the project site, construction of approximately 170,000 square feet of building space, paving of internal roadways and parking areas, and landscaping. The closest noise-sensitive receptors are residential homes located as near as 1,500 feet to the north, 1,600 feet to the east, 700 feet to the south, and 1,800 feet to the west of the project site. In addition there is proposed residential uses as part of the Wasco Center that is located as near as 180 feet to the east and there is property that is zoned for residential use as near as 80 feet to the north.

As discussed in Impact N-1, and as shown above in Table 4.7-12, construction activities would increase exterior noise levels from below 65 dBA to above the City's 65 dBA noise sensitive land use (i.e., residential) standard at Receivers 2, 3, and 4. Table 4.7-12 also shows construction activities would exceed the City's land use standard for exterior areas at Receiver 8; however, the project's construction noise would not increase levels by 1.5 dBA or more at sensitive receptors. Receivers 2, 3, and 4 represent locations of proposed residential uses or property that is zoned for residential use; and these future receivers could experience a significant noise impact if the residences are constructed and occupied prior to completion of construction on the project site.

Mitigation (MM N-1b) is proposed that would require the contractor to install a temporary 14-foot high noise barrier along the property line of the project site that is within 300 feet of any residential unit that is constructed and occupied as well as properly maintaining all construction equipment. If

the properties that are within 300 feet of the project site and proposed for residential or zoned for residential use (i.e., north and adjacent to Margalo Street and east and adjacent to Central Avenue) are not constructed and occupied prior to completion of construction activities on the project site, this measure is not required. If residential uses are constructed and occupied within 300 feet of the project site, this measure is required.

Cumulative Impact Analysis

Construction activities associated with the proposed Walmart may be simultaneous with construction activities associated with the Wasco Center, and as a result may result in a cumulative increase in construction noise levels. As described previously, construction noise levels associated with the proposed Walmart could be significant if the residential areas north and east of the site are constructed and occupied prior to the completion of the construction of the proposed Walmart. Since the proposed Walmart could result in a significant noise impact, it could also contribute to a significant cumulative noise impact.

Mitigation Measures

Project Specific

Implementation of Mitigation Measures N-1a and N-1b are required.

Cumulative

No additional mitigation measures are required.

Level of Significance After Mitigation

Project Specific

Less than significant impact.

Cumulative

Less than significant impact.

