Gas Station & Convenience Store
Noise Impact Study
County of Riverside, CA

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1.0 Introduction

1.1 Purpose of Analysis and Study Objectives

This purpose of this noise impact study is to evaluate the potential noise impacts for the project study area and compare results to City and CEQA thresholds. The assessment was conducted and compared to the noise standards set forth by the Federal, State and Local agencies. Consistent with the California Environmental Quality Act (CEQA) and CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable agencies.
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The following is provided in this report:

- A description of the study area and the proposed project
- Information regarding the fundamentals of noise
- A description of the local noise guidelines and standards
- An evaluation of the existing ambient noise environment
- An analysis of stationary noise impacts from the project site to adjacent land uses
- Construction noise and vibration evaluation

1.2 Site Location and Study Area

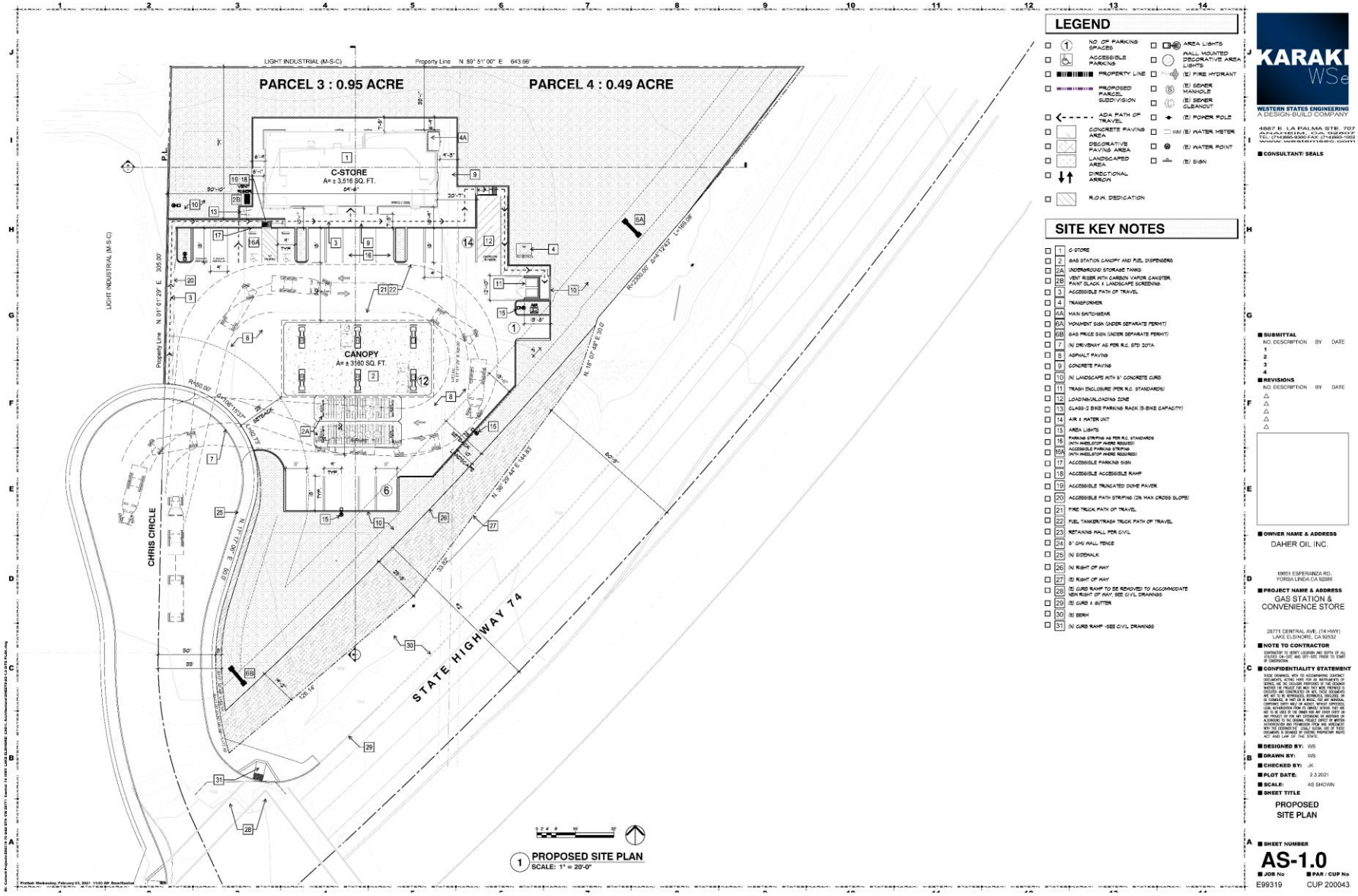
The project site is located at 28771 Central Ave (Hwy 74) in an unincorporated area of the County of Riverside within the Sphere of Influence of the City of Lake Elsinore, California, as shown in Exhibit A. The site is located within the County of Riverside's Elsinore Area Plan and has a current land use classification of Light Industrial. In addition, per the City of Lake Elsinore North Central Sphere Specific Plan Land Use Plan the site has a current land use classification of Business Professional. Land uses surrounding the site include vacant land to the west, a single-family residential use to and commercial uses to the north, multi-family residential uses to the south (across Highway 74), and single-family residential uses to the east (across Highway 74).

1.3 Proposed Project Description

The Project proposes to develop the approximately 1.44-acre project site with a 3,516 square foot convenience market with 12 pump gas station. Exhibit B demonstrates the site plan for the project.

Exhibit A
Location Map

Exhibit B
Site Plan



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CONSULTANT SEALS

SUBMITTAL
NO. DESCRIPTION BY DATE
1
2
3
4

REVISIONS
NO. DESCRIPTION BY DATE
△
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OWNER NAME & ADDRESS
DAHER OIL INC.
19851 ESPERANZA RD.
YORBA LINDA CA 92886

PROJECT NAME & ADDRESS
GAS STATION &
CONVENIENCE STORE
28771 CENTRAL AVE. (74 HWY)
LAKE ELSINORE, CA 92532

NOTE TO CONTRACTOR

CONFIDENTIALITY STATEMENT

DESIGNED BY: WS
DRAWN BY: WS
CHECKED BY: JK
PLOT DATE: 2.3.2021
SCALE: AS SHOWN
SHEET TITLE
PROPOSED
SITE PLAN

SHEET NUMBER
AS-1.0
JOB No E99319
PAR / CUP No CUP 200043

2.0 Fundamentals of Noise

This section of the report provides basic information about noise and presents some of the terms used in the report.

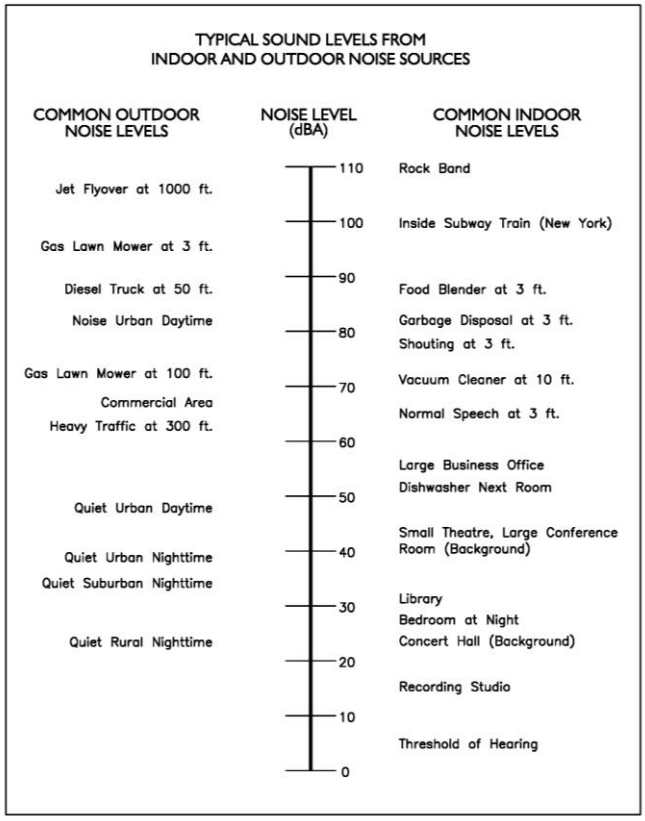
2.1 Sound, Noise and Acoustics

Sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. Sound may be thought of as mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic or stationary noise, the medium of concern is air. *Noise* is defined as sound that is loud, unpleasant, unexpected, or unwanted.

2.2 Frequency and Hertz

A continuous sound is described by its *frequency* (pitch) and its *amplitude* (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding) and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting out at 20 Hz all the way to the high pitch of 20,000 Hz.

Exhibit C: Typical A-Weighted Noise Levels



2.3 Sound Pressure Levels and Decibels

The *amplitude* of a sound determines its loudness. The loudness of sound increases or decreases as the amplitude increases or decreases. Sound pressure amplitude is measured in units of micro-Newton per square inch meter ($\mu N/m^2$), also called micro-Pascal (µPa). One µPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or L_p) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels, abbreviated dB. Exhibit C illustrates references sound levels for different noise sources.

2.4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two sounds or equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two sounds differ by approximately 10 dB, the higher sound level is the predominant sound.

2.5 Human Response to Changes in Noise Levels

In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report as well as with most environmental documents, the A-scale weighting is typically reported in terms of A-weighted decibel (dBA), a scale designed to account for the frequency-dependent sensitivity of the ear. Typically, the human ear can barely perceive a change in noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g. doubling the volume of traffic on a highway) would result in a barely perceptible change in sound level.

2.6 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns, others are random. Some noise levels are constant while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels.

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level: The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Community Noise Equivalent Level (CNEL): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and after addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time-varying noise level. The energy average noise level during the sample period.

Habitable Room: Any room meeting the requirements of the Uniform Building Code, or other applicable regulations, which is intended to be used for sleeping, living, cooking or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms and similar spaces.

L(n): The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly L50, L90, and L99, etc.

Noise: *A*ny unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Outdoor Living Area: Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

Percent Noise Levels: See L(n).

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL): The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

2.7 Traffic Noise Prediction

Noise levels associated with traffic depends on a variety of factors: (1) volume of traffic, (2) speed of traffic, (3) auto, medium truck (2–3 axle) and heavy truck percentage (4 axle and greater), and sound propagation. The greater the volume of traffic, higher speeds and truck percentages equate to a louder volume in noise. A doubling of the Average Daily Traffic (ADT) along a roadway will increase noise levels by approximately 3 dB; reasons for this are discussed in the sections above.

2.8 Sound Propagation

As sound propagates from a source it spreads geometrically. Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the

receiver. Soft site conditions such as grass, soft dirt or landscaping attenuate noise at a rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 7.5 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located 200 feet from a noise source. Wind, temperature, air humidity, and turbulence can further impact have far sound can travel.

3.0 Ground-Borne Vibration Fundamentals

3.1 Vibration Descriptors

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Several different methods are used to quantify vibration amplitude.

PPV – Known as the peak particle velocity (PPV) which is the maximum instantaneous peak in vibration velocity, typically given in inches per second.

RMS – Known as root mean squared (RMS) can be used to denote vibration amplitude

VdB – A commonly used abbreviation to describe the vibration level (VdB) for a vibration source.

3.2 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Outdoor sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration. To counter the effects of ground-borne vibration, the Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, fragile buildings can be exposed to ground-borne vibration levels of 0.3 inches per second without experiencing structural damage.

3.3 Vibration Propagation

There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wavefront, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wavefront. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wavefront. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

4.0 Regulatory Setting

The proposed project is located in Riverside County, California and noise regulations are addressed through the efforts of various federal, state and local government agencies. The agencies responsible for regulating noise are discussed below.

4.1 Federal Regulations

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

- Publicize noise emission standards for interstate commerce
- Assist state and local abatement efforts
- Promote noise education and research

The Federal Office of Noise Abatement and Control (ONAC) originally was tasked with implementing the Noise Control Act. However, it was eventually eliminated leaving other federal agencies and committees to develop noise policies and programs. Some examples of these agencies are as follows: The Department of Transportation (DOT) assumed a significant role in noise control through its various agencies. The Federal Aviation Agency (FAA) is responsible for regulating noise from aircraft and airports. The Federal Highway Administration (FHWA) is responsible for regulating noise from the interstate highway system. The Occupational Safety and Health Administration (OSHA) is responsible for the prohibition of excessive noise exposure to workers. The Housing and Urban Development (HUD) is responsible for establishing noise regulations as it relates to exterior/interior noise levels for new HUD-assisted housing developments near high noise areas.

The federal government 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 constructed adjacent to a highway or, or alternatively 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 source, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

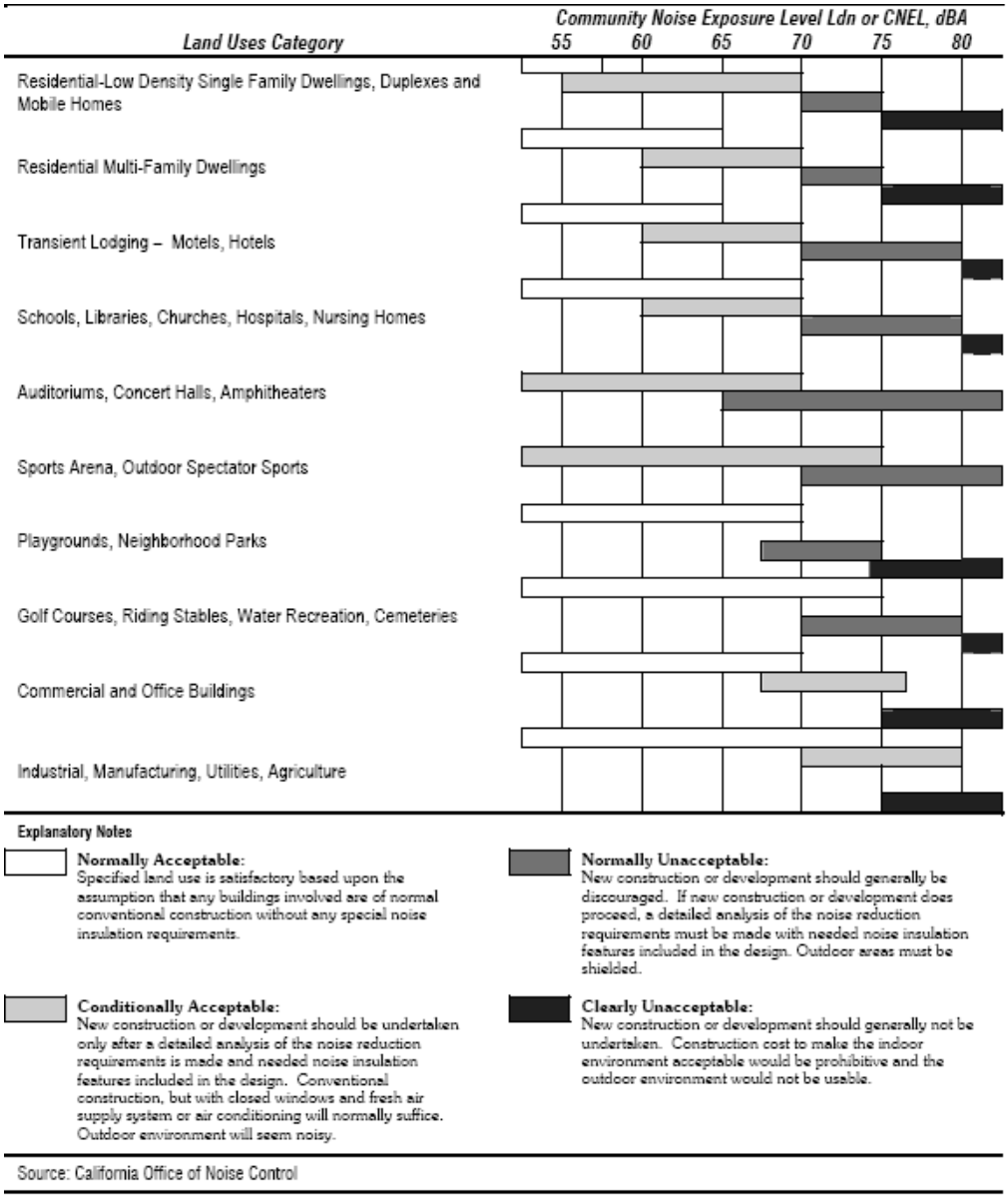
4.2 State Regulations

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) 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.” The matrix allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

The State of California has established noise insulation standards as outlined in Title 24 and the Uniform Building Code (UBC) which in some cases requires acoustical analyses to outline exterior noise levels and to ensure interior noise levels do not exceed the interior threshold. The State mandates that the legislative body of each county and city 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 as illustrated in Exhibit D.

Exhibit D: Land Use Compatibility Guidelines



4.3 County of Riverside Noise Regulations

The County of Riverside outlines their noise regulations and standards within the Municipal Code and the Noise Element of the County of Riverside General Plan.

County of Riverside Municipal Code

CHAPTER 9.52 –Noise Regulations

9.52.010. - Intent

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of Riverside County residents and degrade their quality of life. Pursuant to its police power, the board of supervisors declares that noise shall be regulated in the manner described in this chapter. This chapter is intended to establish county-wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are established.
(Ord. 847 § 1, 2006)

9.52.020. - Exemptions

A. Sound emanating from the following sources is exempt from the provisions of this chapter:
B. Facilities owned or operated by or for a governmental agency;
C. Capital improvement projects of a governmental agency;
D. The maintenance or repair of public properties;
E. Public safety personnel in the course of executing their official duties, including, but not limited to, sworn peace officers, emergency personnel and public utility personnel. This exemption includes, without limitation, sound emanating from all equipment used by such personnel, whether stationary or mobile;
F. Public or private schools and school-sponsored activities;
G. Agricultural operations on land designated "Agriculture" in the Riverside County general plan, or land zoned A-l (light agriculture), A-P (light agriculture with poultry), A-2 (heavy agriculture), A-D (agriculture-dairy) or C/V (citrus/vineyard), provided such operations are carried out in a manner consistent with accepted industry standards. This exemption includes, without limitation, sound emanating from all equipment used during such operations, whether stationary or mobile;
H. Wind energy conversion systems (WECS), provided such systems comply with the WECS noise provisions of Riverside County Ordinance No. 348;
I. Private construction projects located one-quarter of a mile or more from an inhabited dwelling;
J. Private construction projects located within one-quarter of a mile from an inhabited dwelling, provided that:
   1. Construction does not occur between the hours of six p.m. and six a.m. during the months of June through September, and
   2. Construction does not occur between the hours of six p.m. and seven a.m. during the months of October through May;
K. Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., provided such maintenance occurs between the hours of seven a.m. and eight p.m.;
L. Motor vehicles, other than off-highway vehicles. This exemption does not include sound emanating from motor vehicle sound systems;

M. Heating and air conditioning equipment;
Safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare;
N. The discharge of firearms consistent with all state laws.

(Ord. 847 § 2, 2006)

County of Riverside – Noise Ordinance

No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior sound level on any other occupied property to exceed the sound level standards set forth in Table 1.

Table 1: Riverside County Allowable Exterior Noise Level[1]

Sound Level Standards (dBA Leq)*

General Plan Land Use Designation	Maximum Decibel Level	
	7 a.m. - 10 p.m.	10 p.m. - 7 a.m.
Light Industrial	75	55
Residential	65	45

(Ord. 847 § 4, 2006)

County of Riverside General Plan

Goals, Policies, and Implementation Measures

Policies, goals and implementation program measures from the Noise Element that would mitigate potential impacts on noise include the following.

N2.1 Create a County Noise Inventory to identify major noise generators and noise-sensitive land uses, and to establish appropriate noise mitigation strategies.

N2.2 Require a qualified acoustical specialist to prepare acoustical studies for proposed noise-sensitive projects within noise impacted areas to mitigate existing noise.

N2.3 Mitigate exterior and interior noises to the levels listed in the table below to the extent feasible, for stationary sources

City of Lake Elsinore Municipal Code

CHAPTER 17.176 - NOISE CONTROL

Sec. 17.176.010. - Purpose

In order to control unnecessary, excessive and annoying noise and vibration in the City, it is hereby declared to be the policy of the City to prohibit such noise and vibration generated from or by all sources as specified in this chapter. It shall be the policy of the City to maintain quiet in those areas which exhibit low noise levels and to implement programs aimed at reducing noise in those areas within the City where noise levels are above acceptable values.

It is determined that certain noise levels and vibrations are detrimental to the public health, welfare and safety, and are contrary to public interest. Therefore, the City Council does ordain and declare that creating, maintaining, causing or allowing to be created, caused or maintained, any noise or vibration in a manner prohibited by or not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such.

[Ord. 772 § 17.78.010, 1986. Code 1987 § 17.78.010].

City of Lake Elsinore – Noise Ordinance

Section 17.176.060 from the noise ordinance outlines the City's exterior noise limits as it relates to stationary noise sources.

Table 2: Lake Elsinore Allowable Exterior Noise Level[1]

Sound Level Standards (dBA Leq)*

General Plan Land Use Designation	Maximum Decibel Level	
	7 a.m. - 10 p.m.	10 p.m. - 7 a.m.
Single-Family Residential	50	40
Multiple Dwelling Residential	50	45
Commercial and Office	60	55
General Commercial	65	60
Light Industrial	70	70
Heavy Industrial	75	75

(Ord. 772 § 17.78.060, 1986. Code 1987 § 17.78.060)

5.0 Study Method and Procedure

The following section describes the noise modeling procedures and assumptions used for this assessment.

5.1 Noise Measurement Procedure and Criteria

Noise measurements are taken to determine the existing noise levels. A noise receiver or receptor is any location in the noise analysis in which noise might produce an impact. The following criteria are used to select measurement locations and receptors:

- Locations expected to receive the highest noise impacts, such as the first row of houses
- Locations that are acoustically representative and equivalent of the area of concern
- Human land usage
- Sites clear of major obstruction and contamination

MD conducted the sound level measurements in accordance to the City's and Caltrans (TeNS) technical noise specifications. All measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA). The following gives a brief description of the Caltrans Technical Noise Supplement procedures for sound level measurements:

- Microphones for sound level meters were placed 5-feet above the ground for all measurements
- Sound level meters were calibrated (Larson Davis CAL 200) before and after each measurement
- Following the calibration of equipment, a windscreen was placed over the microphone
- Frequency weighting was set on "A" and slow response
- Results of the long-term noise measurements were recorded on field data sheets
- During any short-term noise measurements, any noise contaminations such as barking dogs, local traffic, lawn mowers, or aircraft fly-overs were noted
- Temperature and sky conditions were observed and documented

5.2 Noise Measurement Locations

Noise monitoring locations were selected based on the nearest sensitive receptors relative to the proposed onsite noise sources. one (1) long-term 24-hour noise measurements was conducted at or near the project site and are illustrated in Exhibit E. Appendix A includes photos, field sheet, and measured noise data.

5.3 Stationary Noise Modeling

SoundPLAN (SP) acoustical modeling software was utilized to model future worst-case stationary noise impacts to the adjacent land uses. SP is capable of evaluating multiple stationary noise source impacts at various receiver locations. SP's software utilizes algorithms (based on the inverse square law and reference equipment noise level data) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations.

The future worst-case noise level projections were modeled using referenced sound level data for the various stationary on-site sources (parking spaces, and gas canopy). The model assumes approximately 22 parking spots and 6 fueling stations under the gas canopy.

The gas canopy was modeled as an area source with a reference level of 65 dBA. The reference equipment sound level data is provided in Appendix B. This includes average noise levels associated with the closing of car doors, turning on/off vehicles, low voltage speakers associated with the gas canopy, and talking.

The SP model assumes that all noise sources are operating simultaneously (worst-case scenario), when in actuality the noise will be intermittent and lower in noise level. SP modeling inputs and outputs ate provided in Appendix C.

5.4 FHWA Traffic Noise Prediction Model

Traffic noise from vehicular traffic was projected using a computer program that replicates the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA model arrives at the predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Roadway volumes and percentages correspond to the project's traffic scoping agreement as prepared by Integrated Engineering Group, the City's traffic counts, and roadway classification. The referenced traffic data was applied to the model and is in Appendix B. The following outlines the key adjustments made to the REMEL for the roadway inputs:

- Roadway classification – (e.g. freeway, major arterial, arterial, secondary, collector, etc),
- Roadway Active Width – (distance between the center of the outer most travel lanes on each side of the roadway)
- Average Daily Traffic Volumes (ADT), Travel Speeds, Percentages of automobiles, medium trucks and heavy trucks
- Roadway grade and angle of view
- Site Conditions (e.g. soft vs. hard)
- Percentage of total ADT which flows each hour through-out a 24-hour period

Table 3 indicates the roadway parameters and vehicle distribution utilized for this study.

<Table 3 Next Page>

Table 3: Roadway Parameters and Vehicle Distribution

Roadway	Segment	Existing ADT	Existing Plus Project ADT	Speed (MPH)	Site Conditions
SH-74/Central Ave	Ardenwood Way to Conard Ave	36,267	36,875	40	Hard
Vehicle Distribution (Truck Mix)[2]					
Motor-Vehicle Type		**Daytime % (7AM to 7 PM)**	**Evening % (7 PM to 10 PM)**	**Night % (10 PM to 7 AM)**	**Total % of Traffic Flow**
Automobiles		75.5	14.0	10.5	97.42
Medium Trucks		48.9	2.2	48.9	1.84
Heavy Trucks		47.3	5.4	47.3	0.74

Notes:
[1] Integrated Engineering Group (Central Avenue Commercial Retails), and The City's traffic counts.

The following outlines key adjustments to the REMEL for project site parameter inputs:

- Vertical and horizontal distances (Sensitive receptor distance from noise source)
- Noise barrier vertical and horizontal distances (Noise barrier distance from sound source and receptor).
- Traffic noise source spectra
- Topography

5.5 FHWA Roadway Construction Noise Model

The construction noise analysis utilizes the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RNCM), together with several key construction parameters. Key inputs include distance to the sensitive receiver, equipment usage, % usage factor, and baseline parameters for the project site.

The project was analyzed based on the different construction phases. Construction noise is expected to be loudest during the grading, concrete and building phases of construction. The construction noise calculation output worksheet is located in Appendix E. The following assumptions relevant to short-term construction noise impacts were used:

- It is estimated that construction will occur over a 6-month time period. Construction noise is expected to be the loudest during the grading, concrete, and building phases.

1 = short-term
Monitoring Location

Exhibit E

Measurement Locations

6.0 Existing Noise Environment

A twenty-four (24) hour ambient noise measurement was conducted at the property site. The noise measurement location was chosen based on the similar horizontal distance from the centerline of Central Avenue from the residential uses to the east. The noise measurement was taken to determine the existing ambient noise levels. Noise data indicates that traffic along SH-74/Central Avenue is the primary source of noise impacting the site and the adjacent uses. This assessment utilizes the ambient noise data as a basis and compares project operational levels to said data.

6.1 Long-Term Noise Measurement Results

The results of the Long-term noise data are presented in Table 4.

Table 4: Long-Term Noise Measurement Data[1]

Date	Time	dB(A)							
		L_{EQ}	L_{MAX}	L_{MIN}	L_2	L_8	L_{25}	L_{50}	L_{90}
1/6/2021	7PM-8PM	67.8	89.8	50.9	76.7	72.7	71.0	62.6	56.0
7/20/2020	8PM-9PM	66.7	88.7	49.8	75.6	71.6	69.9	61.5	54.9
7/20/2020	9PM-10PM	66.0	88.0	49.1	74.9	70.9	69.2	60.8	54.2
7/20/2020	10PM-11PM	65.0	87.0	48.1	73.9	69.9	68.2	59.8	53.2
7/20/2020	11PM-12AM	64.4	86.4	47.5	73.3	69.3	67.6	59.2	52.6
7/20/2020	12AM-1AM	62.8	84.8	45.9	71.7	67.7	66.0	57.6	51.0
7/20/2020	1AM-2AM	60.4	82.4	43.5	69.3	65.3	63.6	55.2	48.6
7/20/2020	2AM-3AM	59.1	81.1	42.2	68.0	64.0	62.3	53.9	47.3
7/20/2020	3AM-4AM	57.4	79.4	40.5	66.3	62.3	60.6	52.2	45.6
7/20/2020	4AM-5AM	58.4	80.4	41.5	67.3	63.3	61.6	53.2	46.6
7/21/2020	5AM-6AM	62.2	84.2	45.3	71.1	67.1	65.4	57.0	50.4
7/21/2020	6AM-7AM	68.6	90.6	51.7	77.5	73.5	71.8	63.4	56.8
7/21/2020	7AM-8AM	70.9	92.9	54.0	79.8	75.8	74.1	65.7	59.1
7/21/2020	8AM-9AM	69.0	91.0	52.1	77.9	73.9	72.2	63.8	57.2
7/21/2020	9AM-10AM	68.0	90.0	51.1	76.9	72.9	71.2	62.8	56.2
7/21/2020	10AM-11AM	67.9	89.9	51.0	76.8	72.8	71.1	62.7	56.1
7/21/2020	11AM-12PM	68.1	90.1	51.2	77.0	73.0	71.3	62.9	56.3
7/21/2020	12PM-1PM	68.2	90.2	51.3	77.1	73.1	71.4	63.0	56.4
7/21/2020	1PM-2PM	68.3	90.3	51.4	77.2	73.2	71.5	63.1	56.5
7/21/2020	2PM-3PM	68.5	90.5	51.6	77.4	73.4	71.7	63.3	56.7
7/21/2020	3PM-4PM	69.7	91.7	52.8	78.6	74.6	72.9	64.5	57.9
7/21/2020	4PM-5PM	71.2	93.2	54.3	80.1	76.1	74.4	66.0	59.4
7/21/2020	5PM-6PM	70.9	92.9	54.0	79.8	75.8	74.1	65.7	59.1
7/21/2020	6PM-7PM	69.1	91.1	52.2	78.0	74.0	72.3	63.9	57.3
LDN		71.6							

Notes:
[1.] Long-term noise monitoring location (LT1) is illustrated in Exhibit E. The quietest hourly nighttime noise interval is highlighted in blue when project operations could occur.

Noise data indicates the ambient noise level ranged between 57.4 dBA Leq(h) to 70.9 dBA Leq(h) at the project site. Maximum levels reach 70.9 dBA as a result of traffic along SH-74/Central Avenue. Additional field notes and photographs are provided in Appendix A.

For this evaluation, MD has utilized the quietest hourly level (during potential operational hours) and has compared the project's projected noise levels to the said ambient level. The quietest (lowest) nighttime hourly level occurred between 3AM to 4AM (57.4 dBA, Leq(h)).

7.0 Future Noise Environment Impacts and Mitigation

This assessment analyzes future noise impacts as a result of the project. The analysis details the estimated exterior noise levels. Stationary noise impacts are analyzed from the on-site noise sources such as cars coming and going, and drive-thru restaurant speakerphone.

7.1 Future Exterior Noise

The following outlines the exterior noise levels associated with the proposed project.

7.1.1 Noise Impacts to Off-Site Receptors Due to Stationary Sources

Sensitive receptors that may be affected by project operational noise include commercial and residential to the north and single family residential to the east (across Highway 74) and multi-family residential uses to the southeast (across Highway 74). The worst-case stationary noise was modeled using SoundPLAN acoustical modeling software. Worst-case assumes that all project activities are always operational when in reality the noise will be intermittent and cycle on/off depending on customer usage. Project convenience store and gas pumps are anticipated to be operational 24-hours a day.

A total of four (4) receptors were modeled to evaluate the proposed project's operational impact. A receptor is denoted by a yellow dot. All yellow dots represent either a property line or a sensitive receptor such as an outdoor sensitive area (courtyard, patio, backyard, etc).

This study compares the Project's operational noise levels to two (2) different noise assessment scenarios: 1) Project Only operational noise level projections, 2) Project plus ambient noise level projections.

Project Operational Noise Levels
Exhibit F shows the "project only" operational noise levels at the project site and illustrates how the noise will propagate at the property lines and/or sensitive receptor area. Operational noise levels at the adjacent uses are anticipated to range between 40 dBA to 53 dBA Leq (depending on the location).

Project Plus Ambient Operational Noise Levels
Table 5 demonstrates the project plus the ambient noise levels. Project plus ambient noise level projections are anticipated to range between 57 to 59 dBA Leq depending on location. Therefore, the project has been compared to the quietest hourly average ambient noise level for comparative purposes.

<Table 5 on Next Page>

Table 5: Worst-case Predicted Noise Level (dBA, Leq)

Receptor[1]	Floor	Existing Ambient Noise Level (dBA, Leq)[2]	Project Noise Level (dBA, Leq)[3]	Total Combined Noise Level (dBA, Leq)	Nighttime (10PM – 7AM) Stationary Noise Limit (dBA, Leq)[4]	Change in Noise Level as Result of Project
1	1	57	40	57	**45**	0.1
2	1		53	59	**55**	1.4
3	1		40	57	**40**	0.1
4	1		40	57	**45**	0.1

Notes:
[1.] Receptors 1 is the nearest north property approximately 140' from the site, Receptor-2 is the west property line of the site. R1 and R2 follow the County of Riverside Ordinance. Receptor 3 is the nearest property line to the east 200' to the east, Receptor-4 is the nearest southern property 225' from the site, both R3 and R4 follow the City of Lake Elsinore Ordinance.
[2.] Existing ambient taken as one-hour measurement.
[3.] See Exhibit G for the operational noise level projections at said receptors.
[4.] Per the County of Riverside noise ordinance Chapter 9.52 and the City of Lake Elsinore Municipal Code Section 17.176.060.

As shown in Table 5, the project does not exceed the County of Riverside and City of Lake Elsinore's nighttime exterior noise limits. The predicted exterior noise level will range between 40 to 53 dBA. Project operations are anticipated to remain below the County and City respective noise limits. Therefore, the impact is less than significant.

When comparing the baseline plus project condition the change in noise level will be between 0.1 to 1.4 dBA, Leq as shown in Table 5.

Table 6 provides the characteristics associated with changes in noise levels.

Table 6: Change in Noise Level Characteristics[1]

Changes in Intensity Level, dBA	Changes in Apparent Loudness
1	Not perceptible
3	Just perceptible
5	Clearly noticeable
10	Twice (or half) as loud

https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm

The change in noise level at all receptors would fall within the "Not Perceptible" acoustic characteristic. Therefore, the impact would be considered less than significant.

7.1.2 Noise Impacts to Off Site Receptors Due to Project Generated Traffic

A worst-case project generated traffic noise level was modeled utilizing the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108. Traffic noise levels were calculated 50 feet from the centerline of the analyzed roadway. The modeling is theoretical and does not take into account any existing

barriers, structures, and/or topographical features that may further reduce noise levels. Therefore, the levels are shown for comparative purposes only to show the difference with and without project conditions. In addition, the noise contours for 60, 65 and 70 dBA CNEL were calculated. The potential off-site noise impacts caused by an increase of traffic from operation of the proposed project on the nearby roadways were calculated for the following scenarios:

Existing Year (without Project): This scenario refers to existing year traffic noise conditions.

Existing Year (Plus Project): This scenario refers to existing year + project traffic noise conditions.

Table 7 compares the without and with project scenario and shows the change in traffic noise levels as a result of the proposed project. It takes a change of 3 dB or more to hear a perceptible difference. As demonstrated in Table 6, the project is anticipated to change the noise 0.1 dBA CNEL.

The County of Riverside uses the FICON Approach. Because the ambient noise condition is over 65 dBA the noise is allowed a 1.5 dB increase. Although there is an increase in traffic noise levels the impact is considered less than significant as the noise levels at or near any existing proposed sensitive receptor would be 73.2 dBA and increase less than 1.5 dB. Therefore, no further mitigation is required.

Table 7: Existing Scenario - Noise Levels Along Roadways (dBA CNEL)

Existing Without Project Exterior Noise Levels

Roadway	Segment	CNEL at 50 Ft (dBA)	Distance to Contour (Ft)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
SH-74/Central Ave	Ardenwood Way to Conard Ave	73.2	81	175	377	812

Existing With Project Exterior Noise Levels

Roadway	Segment	CNEL at 50 Ft (dBA)	Distance to Contour (Ft)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
SH-74/Central Ave	Ardenwood Way to Conard Ave	73.2	82	177	380	819

Change in Existing Noise Levels as a Result of Project

Roadway[1]	Segment	CNEL at 50 Feet dBA[2]			
		Existing Without Project	Existing With Project	Change in Noise Level	Potential Significant Impact
SH-74/Central Ave	Ardenwood Way to Conard Ave	73.2	73.2	0.0	No

Notes:
[1] Exterior noise levels calculated at 5 feet above ground level.
[2] Noise levels calculated from centerline of subject roadway.

7.1.3 Noise Impacts to On Site Receptors Due to Project Generated Traffic

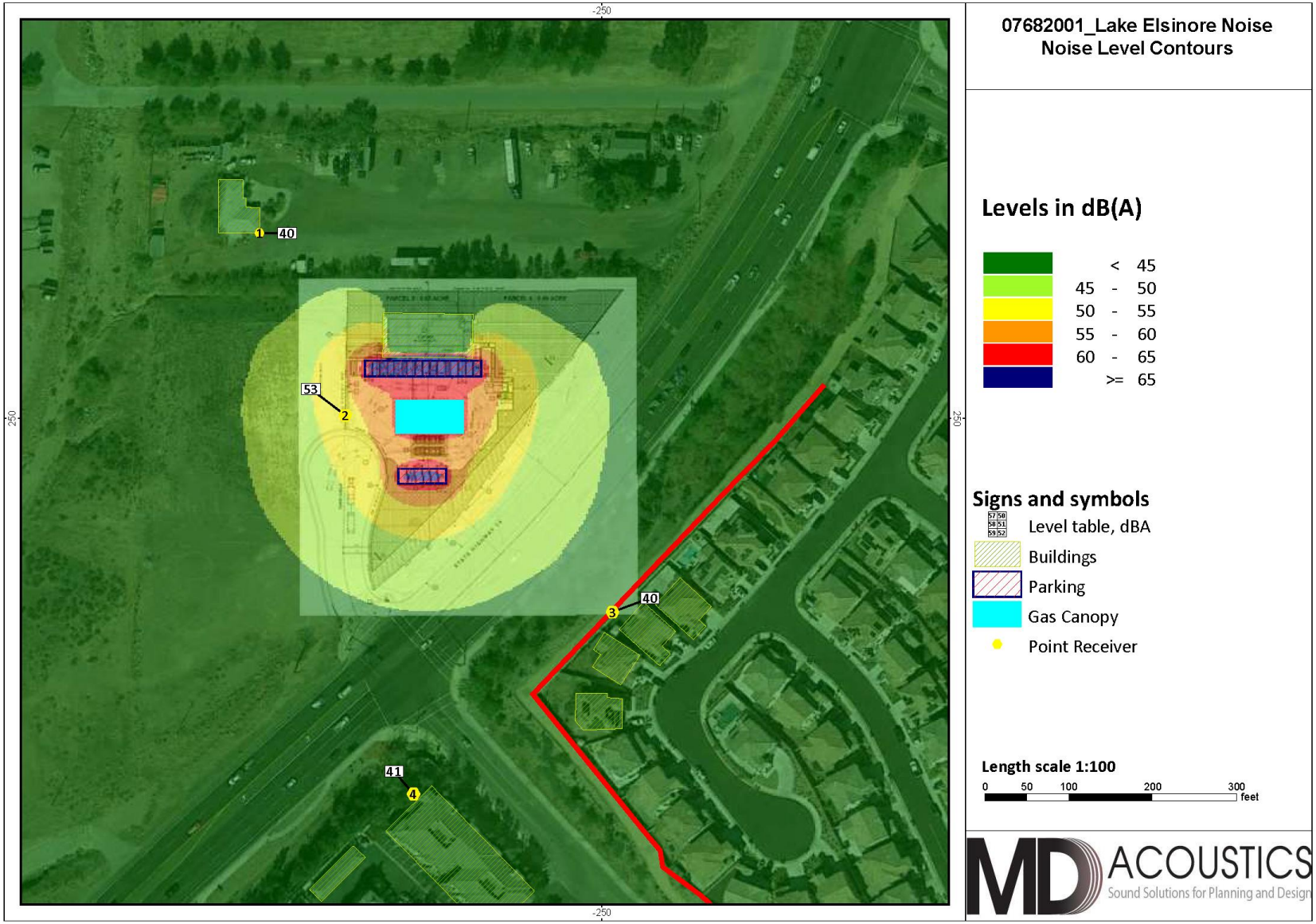
The project site is located approximately 78 feet from the center line of SH-74/Central Ave and would fall within the 70 dBA CNEL or less contour. Therefore, the project would be normally acceptable per the County's Land Use Compatibility Matrix.

7.2 Mitigation Measures

The project will meet the County's nighttime noise ordinance as well as the City of Lake Elsinore's Nighttime noise standard. Therefore, no further mitigation is required.

Exhibit F

Operational Noise Levels Leq(h)



8.0 Construction Noise Impact

The degree of construction noise may vary for different areas of the project site and also vary depending on the construction activities. Noise levels associated with the construction will vary with the different phases of construction.

8.1 Construction Noise

The Environmental Protection Agency (EPA) has compiled data regarding the noise generated characteristics of typical construction activities. The data is presented in Table 8.

Table 8: Typical Construction Equipment Noise Levels[1]

Type	Lmax (dBA) at 50 Feet
Backhoe	80
Truck	88
Concrete Mixer	85
Pneumatic Tool	85
Pump	76
Saw, Electric	76
Air Compressor	81
Generator	81
Paver	89
Roller	74

Notes:
[1] Referenced Noise Levels from FTA noise and vibration manual.

Construction noise is considered a short-term impact and would be considered significant if construction activities are taken outside the allowable times as described in the County of Riversides Ordinance no.847, and the City of Lake Elsinore's Noise Element Section 17.176.060 Table 1. Construction is anticipated to occur during the permissible hours according to the County's Municipal Code. Construction noise will have a temporary or periodic increase in the ambient noise level above the existing within the project vicinity. Furthermore, noise reduction measures are provided to further reduce construction noise. The impact is considered less than significant however construction noise level projections are provided.

Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Noise levels will be loudest during grading phase. A likely worst-case construction noise scenario during grading assumes the use of 1-grader, 1-dozer, and 1-backhoe operating at 134 feet from the nearest property line.

Assuming a usage factor of 40 percent for each piece of equipment, unmitigated noise levels at 134 feet have the potential to reach 74 dBA L_{eq} at the nearest sensitive receptors during building construction. Noise levels for the other construction phases would be lower, approximately 74 dBA. This is below the NIOSH 85 dBA Leq 8hr standard.

8.2 Construction Vibration

Construction activities can produce vibration that may be felt by adjacent land uses. The construction of the proposed project would not require the use of equipment such as pile drivers, which are known to generate substantial construction vibration levels. The primary vibration source during construction may be from a bulldozer. A large bulldozer has a vibration impact of 0.089 inches per second peak particle velocity (PPV) at 25 feet which is perceptible but below any risk to architectural damage.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{equipment} = PPV_{ref} (100/D_{rec})^n$$

Where: PPV_{ref} = reference PPV at 100ft.
D_{rec} = distance from equipment to receiver in ft.
n = 1.1 (the value related to the attenuation rate through ground)

The thresholds from the Caltrans Transportation and Construction Induced Vibration Guidance Manual in Table 9 (below) provides general thresholds and guidelines as to the vibration damage potential from vibratory impacts.

Table 9: Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: Table 19, Transportation and Construction Vibration Guidance Manual, Caltrans, Sept. 2013.
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 10 gives approximate vibration levels for particular construction activities. This data provides a reasonable estimate for a wide range of soil conditions.

Table 10: Vibration Source Levels for Construction Equipment[1]

Equipment	Peak Particle Velocity (inches/second) at 25 feet	Approximate Vibration Level LV (dVB) at 25 feet
Pile driver (impact)	1.518 (upper range)	112
	0.644 (typical)	104
Pile driver (sonic)	0.734 upper range	105
	0.170 typical	93
Clam shovel drop (slurry wall)	0.202	94
Hydromill	0.008 in soil	66
(slurry wall)	0.017 in rock	75
Vibratory Roller	0.21	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drill	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

[1] Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006.

At a distance of 134 feet, a large bulldozer would yield a worst-case 0.020 PPV (in/sec) which may be perceptible for short periods of time during grading along the southern property line of the project site, but is below any threshold of damage. The impact is less than significant and no mitigation is required.

8.3 Construction Noise Reduction Measures

Construction operations must follow the City and County's General Plan and the Noise Ordinance, which states that construction, repair or excavation work performed must occur within the permissible hours. To further ensure that construction activities do not disrupt the adjacent land uses, the following measures should be taken:

1. Construction should occur during the permissible hours as defined in Ordinance No. 847 and Section 17.176.060.

2. During construction, the contractor shall ensure all construction equipment is equipped with appropriate noise attenuating devices.

3. The contractor should locate equipment staging areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the project site during all project construction.

4. Idling equipment should be turned off when not in use.

5. Equipment shall be maintained so that vehicles and their loads are secured from rattling and banging.

9.0 References

State of California General Plan Guidelines: 1998. Governor's Office of Planning and Research

City of Lake Elsinore: General Plan Noise Element. Chapter 3.

City of Lake Elsinore: Municipal Code. Chapter 17.176 Noise Control

City of Lake Elsinore Ordinance no.847

City of Lake Elsinore: Traffic Counts

Integrated Engineering Group, Central Avenue Gas Station Scoping Agreement

County of Riverside Municipal Code Chapter 9.52-Noise Regulations

Appendix A:

Photographs and Field Measurement Data

MD ACOUSTICS
Sound Solutions for Planning and Design
www.mdacoustics.com

AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

CA Office
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Continuous Noise Measurement Datasheet

Project: 28771 Central Ave - Gas Station/Convenience
Site Address/Location: 28771 Central Ave, Lake Elsinore, CA
Date: 1/6/2021 to 1/7/2021
Field Tech/Engineer: Jason Schuyler

Site Observations: Clear Sky, mid 70s during the day, 50s at night. Measured 83 feet from the center line of Central Avenue

General Location:
Sound Meter: NTi XL2 **SN:** 80206
Settings: A-weighted, slow, 1-min, 24-hour duration
Meteorological Con.: 73 degrees F, 2 to 5 mph wind, west to east diretion
Site ID: LT-1

Site Topo: Flat
Ground Type: Soft site, Open raw ground with a road

Noise Source(s) w/ Distance:
C/L of Central Ave is 83 feet from meter

Figure 1: LT-1 Monitoring Location

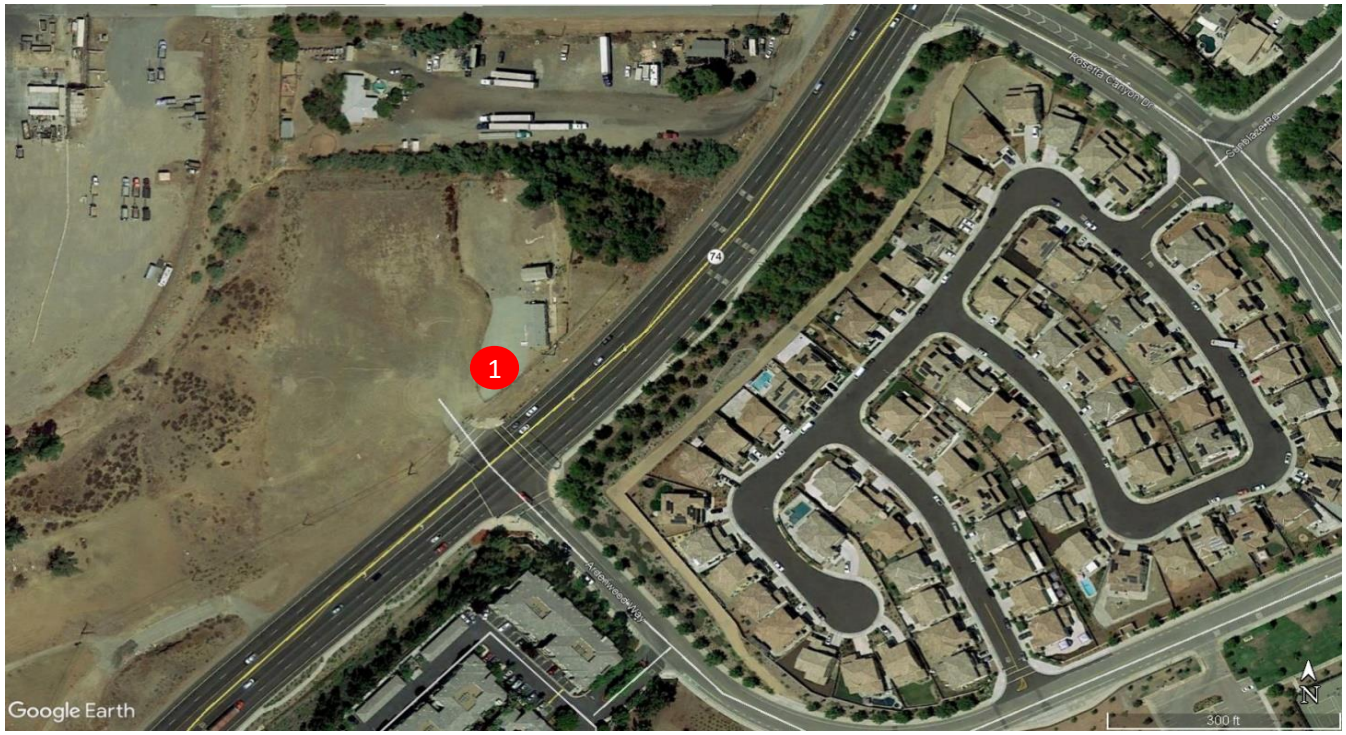


Figure 2: LT-1 Photo

MD ACOUSTICS
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AZ Office
4960 S. Gilbert Rd, Ste 1-461
Chandler, AZ 85249

CA Office
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Noise Measurement Datasheet - Cont.

Project: 28771 Central Ave - Gas Station/Convenience Store **Day:** 1 of 1
Site Address/Location: 28771 Central Ave, Lake Elsinore, CA
Site ID: LT-1

Date	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
1/6/2021	7:00 PM	8:00 PM	67.8	89.8	50.9	76.7	72.7	71.0	62.6	56.0
1/6/2021	8:00 PM	9:00 PM	66.7	88.7	49.8	75.6	71.6	69.9	61.5	54.9
1/6/2021	9:00 PM	10:00 PM	66.0	88.0	49.1	74.9	70.9	69.2	60.8	54.2
1/6/2021	10:00 PM	11:00 PM	65.0	87.0	48.1	73.9	69.9	68.2	59.8	53.2
1/6/2021	11:00 PM	12:00 AM	64.4	86.4	47.5	73.3	69.3	67.6	59.2	52.6
1/7/2021	12:00 AM	1:00 AM	62.8	84.8	45.9	71.7	67.7	66.0	57.6	51.0
1/7/2021	1:00 AM	2:00 AM	60.4	82.4	43.5	69.3	65.3	63.6	55.2	48.6
1/7/2021	2:00 AM	3:00 AM	59.1	81.1	42.2	68.0	64.0	62.3	53.9	47.3
1/7/2021	3:00 AM	4:00 AM	57.4	79.4	40.5	66.3	62.3	60.6	52.2	45.6
1/7/2021	4:00 AM	5:00 AM	58.4	80.4	41.5	67.3	63.3	61.6	53.2	46.6
1/7/2021	5:00 AM	6:00 AM	62.2	84.2	45.3	71.1	67.1	65.4	57.0	50.4
1/7/2021	6:00 AM	7:00 AM	68.6	90.6	51.7	77.5	73.5	71.8	63.4	56.8
1/7/2021	7:00 AM	8:00 AM	70.9	92.9	54.0	79.8	75.8	74.1	65.7	59.1
1/7/2021	8:00 AM	9:00 AM	69.0	91.0	52.1	77.9	73.9	72.2	63.8	57.2
1/7/2021	9:00 AM	10:00 AM	68.0	90.0	51.1	76.9	72.9	71.2	62.8	56.2
1/7/2021	10:00 AM	11:00 AM	67.9	89.9	51.0	76.8	72.8	71.1	62.7	56.1
1/7/2021	11:00 AM	12:00 PM	68.1	90.1	51.2	77.0	73.0	71.3	62.9	56.3
1/7/2021	12:00 PM	1:00 PM	68.2	90.2	51.3	77.1	73.1	71.4	63.0	56.4
1/7/2021	1:00 PM	2:00 PM	68.3	90.3	51.4	77.2	73.2	71.5	63.1	56.5
1/7/2021	2:00 PM	3:00 PM	68.5	90.5	51.6	77.4	73.4	71.7	63.3	56.7
1/7/2021	3:00 PM	4:00 PM	69.7	91.7	52.8	78.6	74.6	72.9	64.5	57.9
1/7/2021	4:00 PM	5:00 PM	71.2	93.2	54.3	80.1	76.1	74.4	66.0	59.4
1/7/2021	5:00 PM	6:00 PM	70.9	92.9	54.0	79.8	75.8	74.1	65.7	59.1
1/7/2021	6:00 PM	7:00 PM	69.1	91.1	52.2	78.0	74.0	72.3	63.9	57.3

CNEL: 71.6

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AZ Office
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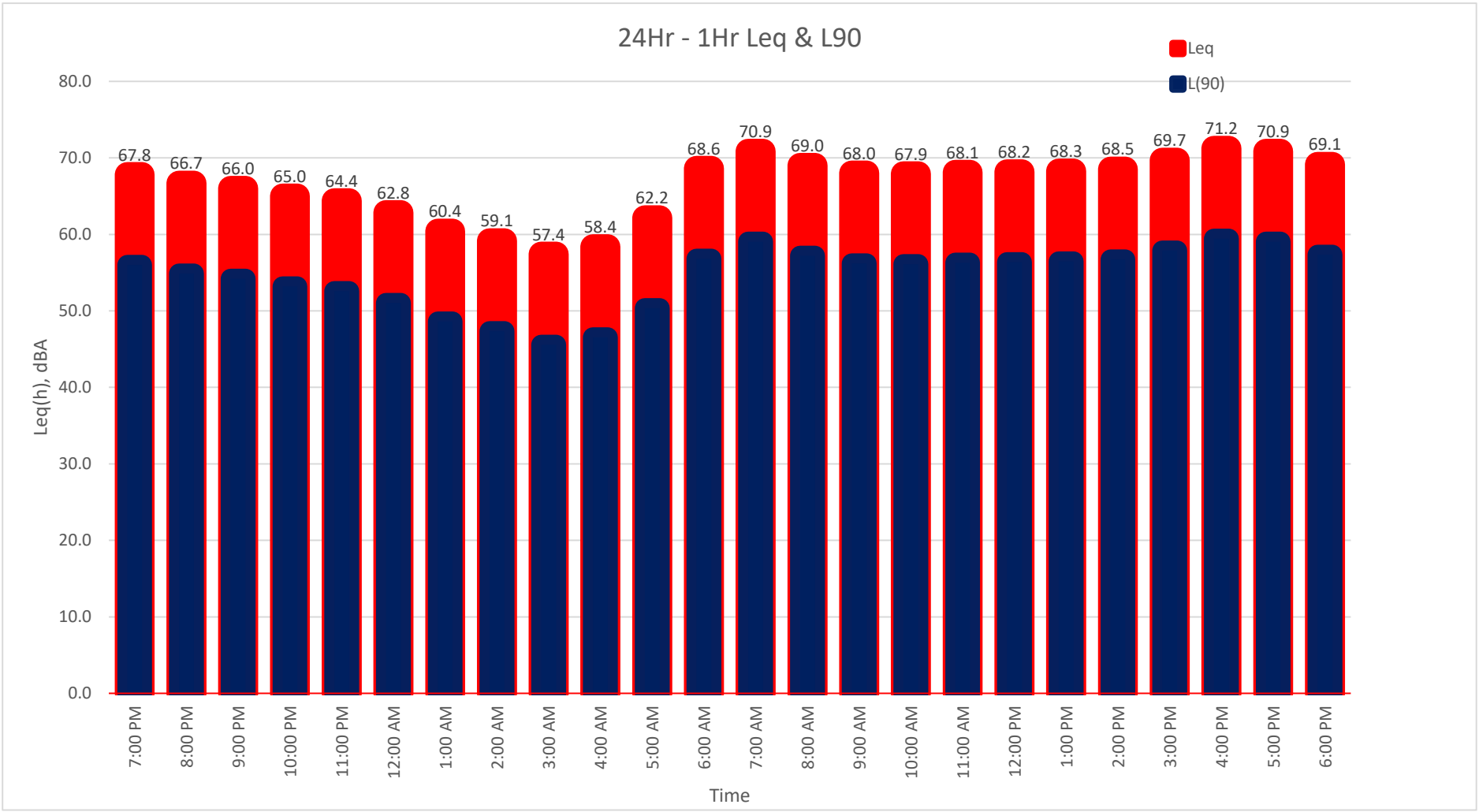
1197 E Los Angeles Ave, C-256
Simi Valley, CA 93065

24-Hour Continuous Noise Measurement Datasheet - Cont.

Project: 28771 Central Ave - Gas Station/Convenience Store **Day:** 1 of 1

Site Address/Location: 28771 Central Ave, Lake Elsinore, CA

Site ID: LT-1



Appendix B:

SoundPlan Input/Output

Lake Elsinore Noise
Octave spectra of the sources in dB(A) - Situation 1: Outdoor SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Auto Gas Canopy	Area	300.56			54.1	78.8	0.0	0.0		0	100%/24h					78.8					
Auto Parking 1	PLot	236.11			56.5	80.2	0.0	0.0		0	Parking	Typical spectrum	63.6	75.2	67.7	72.2	72.3	72.7	70.0	63.8	51.0
Auto Parking 2	PLot	92.92			55.8	75.5	0.0	0.0		0	Parking	Typical spectrum	58.8	70.4	62.9	67.4	67.5	67.9	65.2	59.0	46.2

Lake Elsinore Noise
Input data parking lots - Situation 1: Outdoor SP

Parking lot	PLT	f	Unit B0	rence val	Sep.Mtd.	NRT	KPA dB	KI dB	KD dB	KStrO	he hist.
Auto Parking 1	3	1	0	14	False	False	0	4	1.747 42496 01364 1	0	1
Auto Parking 2	3	1	0	7	False	False	0	4	0	0	1

Lake Elsinore Noise
Contribution level - Situation 1: Outdoor SP

Source	Source group	Source ty	Tr. lane	Ldn dB(A)	A dB	
Receiver Receiver 1 Fl GF dB(A) Ldn 40.2 dB(A)						
Auto Gas Canopy	Default industrial noise	Area		34.5	0.0	
Auto Parking 1	Default parking lot noise	PLot		37.5	0.0	
Auto Parking 2	Default parking lot noise	PLot		33.0	0.0	
Receiver Receiver 2 Fl GF dB(A) Ldn 53.1 dB(A)						
Auto Gas Canopy	Default industrial noise	Area		46.8	0.0	
Auto Parking 1	Default parking lot noise	PLot		51.2	0.0	
Auto Parking 2	Default parking lot noise	PLot		43.6	0.0	
Receiver Receiver 3 Fl GF dB(A) Ldn 40.4 dB(A)						
Auto Gas Canopy	Default industrial noise	Area		36.0	0.0	
Auto Parking 1	Default parking lot noise	PLot		37.6	0.0	
Auto Parking 2	Default parking lot noise	PLot		33.2	0.0	
Receiver Receiver 4 Fl GF dB(A) Ldn 41.4 dB(A)						
Auto Gas Canopy	Default industrial noise	Area		34.1	0.0	
Auto Parking 1	Default parking lot noise	PLot		39.0	0.0	
Auto Parking 2	Default parking lot noise	PLot		35.4	0.0	

Lake Elsinore Noise
Contribution spectra - Situation 1: Outdoor SP

Source	Time slice	Sum	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz	12.5kHz	16kHz	20kHz
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Receiver Receiver 1 Fl GF dB(A) Ldn 40.2 dB(A)																													
Auto Parking 1	Ldn	37.5	20.1	20.1	20.1	29.0	29.0	29.0	18.3	18.3	18.3	20.8	20.8	20.8	24.1	24.1	24.1	25.9	25.9	25.9	21.6	21.6	21.6	9.7	9.7	9.7	-19.6	-19.6	-19.6
Auto Gas Canopy	Ldn	34.5										29.8	29.8	29.8															
Auto Parking 2	Ldn	33.0	15.6	15.6	15.6	24.4	24.4	24.4	13.3	13.3	13.3	15.6	15.6	15.6	20.0	20.0	20.0	22.0	22.0	22.0	16.7	16.7	16.7	1.6	1.6	1.6	-37.6	-37.6	-37.6
Receiver Receiver 2 Fl GF dB(A) Ldn 53.1 dB(A)																													
Auto Parking 1	Ldn	51.2	31.9	31.9	31.9	42.2	42.2	42.2	31.1	31.1	31.1	35.1	35.1	35.1	38.4	38.4	38.4	39.9	39.9	39.9	36.5	36.5	36.5	27.8	27.8	27.8	8.5	8.5	8.5
Auto Gas Canopy	Ldn	46.8										42.1	42.1	42.1															
Auto Parking 2	Ldn	43.6	25.2	25.2	25.2	34.7	34.7	34.7	22.9	22.9	22.9	26.8	26.8	26.8	30.6	30.6	30.6	32.2	32.2	32.2	28.7	28.7	28.7	19.5	19.5	19.5	-1.7	-1.7	-1.7
Receiver Receiver 3 Fl GF dB(A) Ldn 40.4 dB(A)																													
Auto Parking 1	Ldn	37.6	16.1	16.1	16.1	29.5	29.5	29.5	19.6	19.6	19.6	23.0	23.0	23.0	24.2	24.2	24.2	25.1	25.1	25.1	19.7	19.7	19.7	2.4	2.4	2.4	-41.9	-41.9	-41.9
Auto Gas Canopy	Ldn	36.0										31.3	31.3	31.3															
Auto Parking 2	Ldn	33.2	13.2	13.2	13.2	25.1	25.1	25.1	15.5	15.5	15.5	18.9	18.9	18.9	19.7	19.7	19.7	20.5	20.5	20.5	15.9	15.9	15.9	0.7	0.7	0.7	-37.3	-37.3	-37.3
Receiver Receiver 4 Fl GF dB(A) Ldn 41.4 dB(A)																													
Auto Parking 1	Ldn	39.0	19.4	19.4	19.4	31.0	31.0	31.0	15.5	15.5	15.5	18.8	18.8	18.8	25.9	25.9	25.9	28.0	28.0	28.0	21.6	21.6	21.6	2.0	2.0	2.0	-50.0	-50.0	-50.0
Auto Parking 2	Ldn	35.4	16.3	16.3	16.3	26.9	26.9	26.9	11.7	11.7	11.7	15.1	15.1	15.1	22.8	22.8	22.8	24.9	24.9	24.9	19.2	19.2	19.2	2.7	2.7	2.7	-39.2	-39.2	-39.2
Auto Gas Canopy	Ldn	34.1										29.3	29.3	29.3															

Appendix C:

Traffic Noise Modeling Output

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: Convenience Store/Gas Station
ROADWAY SH-74/Central Ave
SEGMENT Ardenwood Way to Conard Ave
LOCATION: City of Lake Elsinore SCENARIO: Existing

JOB #: 0768-20-01
DATE: 18-Jan-21
ENGINEER: R. Pearson

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	36,267
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	44
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,627

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL =	0 FT
AMBIENT =	0
BARRIER =	0 (0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.105	0.974
MEDIUM TRUCKS	0.489	0.022	0.489	0.018
HEAVY TRUCKS	0.473	0.054	0.473	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.0	- -
MEDIUM TRUCKS=	4.00	44.9	- -
HEAVY TRUCKS =	8.01	45.0	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	70.9	68.9	67.6	61.6	70.0	70.6
MEDIUM TRUCKS	62.6	58.7	51.3	60.0	66.1	66.2
HEAVY TRUCKS	63.5	59.5	56.1	60.7	66.9	67.0
VEHICULAR NOISE	72.1	69.7	68.0	65.6	72.8	**73.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	81	175	377	812
LDN	77	165	356	767

FHWA-RD-77-108 ROADWAY TRAFFIC NOISE PREDICTION MODEL (CNEL) - CALVENO

PROJECT: Convenience Store/Gas Station
ROADWAY SH-74/Central Ave
SEGMENT Ardenwood Way to Conard Ave
LOCATION: City of Lake Elsinore SCENARIO: E+P

JOB #: 0768-20-01
DATE: 18-Jan-21
ENGINEER: R. Pearson

NOISE INPUT DATA

ROADWAY CONDITIONS

ADT =	36,875
SPEED =	40
PK HR % =	10
NEAR LANE/FAR LANE DIST =	44
ROAD ELEVATION =	0
GRADE =	0
PK HR VOL =	3,688

RECEIVER INPUT DATA

RECEIVER DISTANCE =		50
DIST C/L TO WALL =		0
RECEIVER HEIGHT =		5
WALL DISTANCE FROM RECEIVER =		50
PAD ELEVATION =		0
ROADWAY VIEW:	LF ANGLE	-90
	RT ANGLE	90
	DF ANGLE	180

SITE CONDITIONS

AUTOMOBILES	15	
MED TRUCKS	15	(HARD SITE=10, SOFT SITE=15)
HVY TRUCKS	15	

WALL INFORMATION

HTH WALL =	0 FT
AMBIENT =	0
BARRIER =	0 (0=WALL,1=BERM)

VEHICLE MIX DATA

VEHICLE TYPE	DAY	EVE	NIGHT	DAILY
AUTOMOBILES	0.755	0.140	0.105	0.974
MEDIUM TRUCKS	0.489	0.002	0.489	0.018
HEAVY TRUCKS	0.473	0.054	0.473	0.007

MISC. VEHICLE INFO

VEHICLE TYPE	HEIGHT	SLE DISTANCE	GRADE ADJUSTMENT
AUTOMOBILES =	2.00	45.0	- -
MEDIUM TRUCKS=	4.00	44.9	- -
HEAVY TRUCKS =	8.01	45.0	0.0

NOISE OUTPUT DATA

NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

VEHICLE TYPE	PK HR LEQ	DAY LEQ	EVEN LEQ	NIGHT LEQ	LDN	CNEL
AUTOMOBILES	71.0	69.0	67.6	61.6	70.1	70.7
MEDIUM TRUCKS	62.7	58.8	41.4	60.0	66.2	66.2
HEAVY TRUCKS	63.6	59.5	56.1	60.8	67.0	67.1
VEHICULAR NOISE	72.2	69.8	68.0	65.6	72.9	**73.2**

NOISE CONTOUR (FT)				
NOISE LEVELS	70 dBA	65 dBA	60 dBA	55 dBA
CNEL	82	177	380	819
LDN	77	167	360	775

Exhibit B

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the Riverside County Transportation Department requirements for traffic impact analysis of the following project. The analysis must follow the Riverside County Transportation Department Traffic Study Guidelines dated February 2005.

Case No. CUP# 200043
Related Cases -
SP No.
EIR No.
GPA No.
CZ No.
Project Name: Central Avenue Gas Station
Project Address: Central Avenue and Ardenwood Way
Project Description: Project is proposing the construction of a gas station with 6 fuel dispensers and a 4k square feet C-store

	Consultant	Developer
Name:	Integrated Engineering Group	Western States Engineering
Address:	23905 Clinton Keith Road 114-280 Wildomar CA 92562	4887 E. La Palma, ste. 707 Anaheim CA, 92807
Telephone:	951-833-3105	714-695-9300
Fax:		

A. Trip Generation Source: (ITE 10th Edition)

Current GP Land Use	*Provide General Plan Land Use Designation (e.g.: MDR, CR, etc)*	Proposed Land Use	
Current Zoning	M-SC	Proposed Zoning	

Current Trip Generation	In	Out	Total	Proposed Trip Generation In	Out	Total
AM Trips	0	0	0	64	64	128
PM Trips	0	0	0	61	61	122

Internal Trip Allowance ☐ Yes ☐ No (0 % Trip Discount)
Pass-By Trip Allowance ☐ Yes ☐ No (62/56 % AM/PM Trip Discount)*

A passby trip discount of 25% is allowed for appropriate land uses. The passby trips at adjacent study area intersections and project driveways shall be indicated on a report figure.

* Pass-by reduction rates provided by the ITE Trip Generation Handbook (3rd Edition, 2017) were used in calculating the project trip generation.

B. Trip Geographic Distribution: N 20 % S 30 % E 25 % W 25 %
(attach exhibit for detailed assignment)

C. Background Traffic

Project Build-out Year: 2022
Annual Ambient Growth Rate: 2 %
Phase Year(s) N/A

Other area projects to be analyzed: Central Avenue Commercial Retail cumulative project will be included in the analysis

Model/Forecast methodology No buildout analysis

Exhibit B – Scoping Agreement – Page 2

***D.* Study intersections:** *(NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)*

1. SH-74/Central Avenue and Ardenwood Way
2. SH-74/Central Avenue and Conrad Avenue
3. SH-74/Central Avenue and Allan Street
4. SH-74/Central Avenue and Rosetta Canyon Rd.
5. SH-74/Central Avenue and Crater Drive
6.
7.
8.
9.
10.

***E.* Study Roadway Segments:** *(NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)*

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

E. Other Jurisdictional Impacts

Is this project within a City's Sphere of Influence or one-mile radius of City boundaries? ☐ Yes ☐ No

If so, name of City Jurisdiction: Lake Elsinore

F. Site Plan (please attach reduced copy)

G. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by Transportation Department)
(NOTE: If the traffic study states that "a traffic signal is warranted" (or "a traffic signal appears to be warranted," or similar statement) at an existing unsignalized intersection under existing conditions, 8-hour approach traffic volume information must be submitted in addition to the peak hourly turning movement counts for that intersection.)
VMT analysis will be provided for County staff review and approval

H. Existing Conditions

Traffic count data must be new or recent. Provide traffic count dates if using other than new counts.
Date of counts
Intersection turning movement counts conducted on October 22, 2020 will be used in the TIA.

***NOTE* Traffic Study Submittal Form and appropriate fee must be submitted with, or prior to submittal of this form. Transportation Department staff will not process the Scoping Agreement prior to receipt of the fee.**

Recommended by:

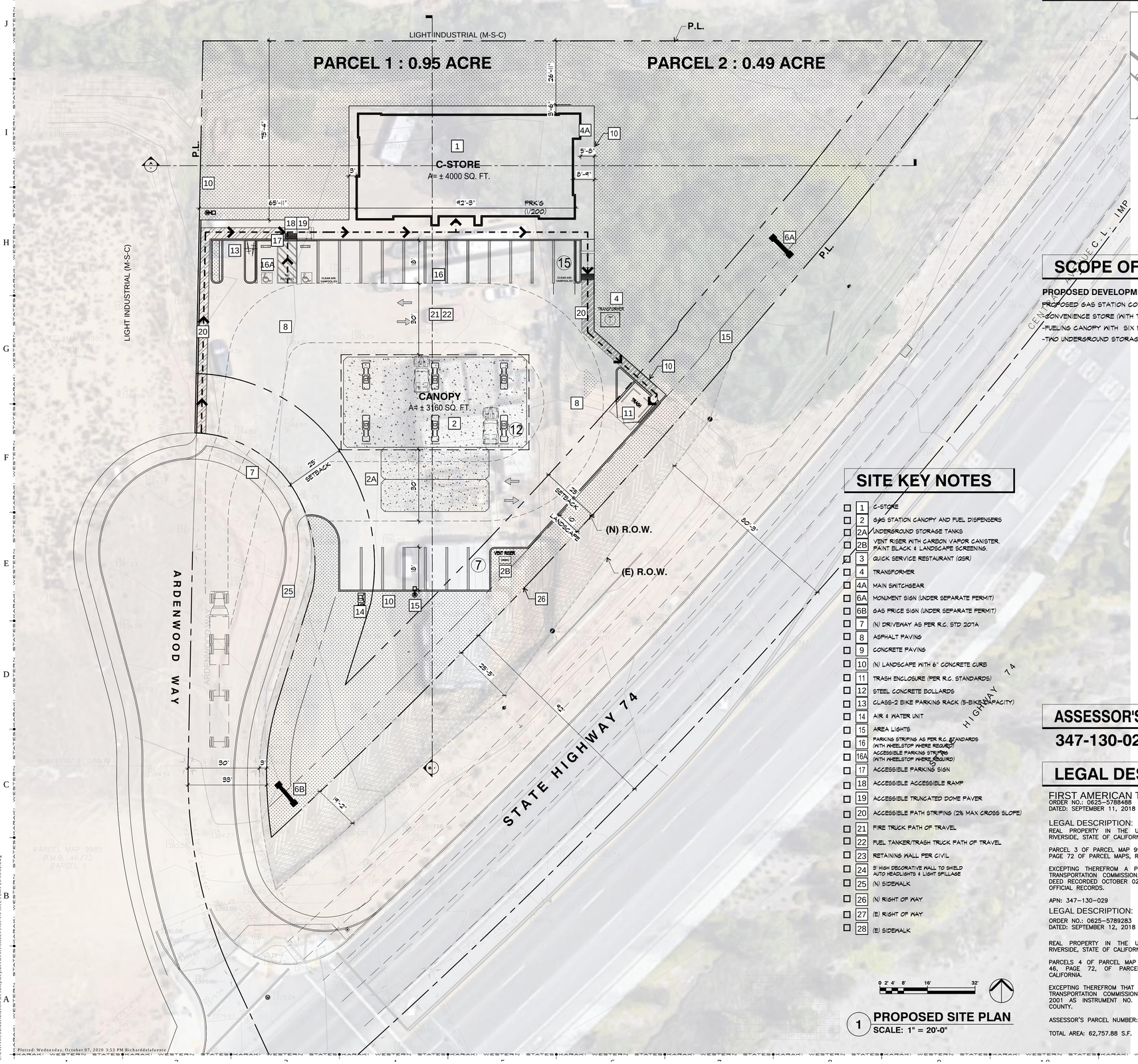
George Ghossain 12/16/20
Consultant's Representative Date

Approved Scoping Agreement:

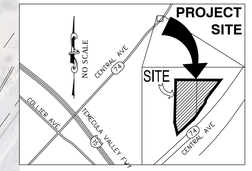
Riverside County Transportation Department Date

Scoping Agreement Submitted on 12/16/20

Revised on



VICINITY MAP



LEGEND

- NO. OF PARKING SPACES
- ACCESSIBLE PARKING
- PROPERTY LINE
- PROPOSED PARCEL SUBDIVISION
- ADA PATH OF TRAVEL
- CONCRETE PAVING AREA
- DECORATIVE PAVING AREA
- LANDSCAPED AREA
- DIRECTIONAL ARROW
- R.O.W. DEDICATION
- AREA LIGHTS
- WALL MOUNTED DECORATIVE AREA LIGHTS
- (E) FIRE HYDRANT
- (E) SEWER MANHOLE
- (E) SEWER CLEANOUT
- (E) POWER POLE
- WM (E) WATER METER
- (E) WATER POINT
- (E) SIGN

SCOPE OF WORK

PROPOSED DEVELOPMENT

PROPOSED GAS STATION COMPRISING OF:
- CONVENIENCE STORE (WITH TYPE 20-ABC)
- FUELING CANOPY WITH SIX MULTI-PRODUCT DISPENSERS
- TWO UNDERGROUND STORAGE TANKS

PROJECT DATA

ZONING	LIGHT INDUSTRIAL
LAND USE	MANUFACTURING-SERVICE COMMERCIAL
AREA OF SITE (GROSS ACREAGE)	
TOTAL AREA : ± 62,726 S.F. (1.44 acre)	
AREA OF PROJECT (NET ACREAGE)	
TOTAL AREA : ± 62,726 S.F. (1.44 acre)	

BLDG SETBACKS	REQUIRED	PROVIDED
FRONT (SOUTH)	25'-0"	25'-0"
REAR (NORTH)	0'-0"	0'-0"
LEFT (WEST)	25'-0"	25'-0"
RIGHT (EAST)	0'-0"	0'-0"
LANDSCAPE AREA	10%	29,002 S.F. (51%)
FLOOR AREA RATIO	-	± 0.11
MAXIMUM HEIGHT	40'-0"	28'-0"
PARKING	39	51

BUILDING DATA

C-STORE

AREAS	± 4,000 SF
OCCUPANCY	M
TYPE OF CONST	V-B
NUMBER OF STORY	1
BLDG HEIGHT	± 28'-0"
SPRINKLERS	NONE

CANOPY

AREA	± 3,160 SF
OCCUPANCY	M
TYPE OF CONST	II-B
NUMBER OF STORY	1
BLDG HEIGHT	20'-0"
SPRINKLERS	NONE

TOTAL BUILDINGS AREA (GFA) ± 9,160 SF
± 0.15 ACRE (NET ACREAGE)

SITE KEY NOTES

1. C-STORE
2. GAS STATION CANOPY AND FUEL DISPENSERS
2A. UNDERGROUND STORAGE TANKS
2B. VENT RISER WITH CARBON VAPOR CANISTER. PAINT BLACK & LANDSCAPE SCREENING.
3. QUICK SERVICE RESTAURANT (QSR)
4. TRANSFORMER
4A. MAIN SWITCHGEAR
6A. MONUMENT SIGN (UNDER SEPARATE PERMIT)
6B. GAS PRICE SIGN (UNDER SEPARATE PERMIT)
7. (N) DRIVEWAY AS PER R.C. STD 207A
8. ASPHALT PAVING
9. CONCRETE PAVING
10. (N) LANDSCAPE WITH 6" CONCRETE CURB
11. TRASH ENCLOSURE (PER R.C. STANDARDS)
12. STEEL CONCRETE BOLLARDS
13. CLASS-2 BIKE PARKING RACK (5-BIKE CAPACITY)
14. AIR & WATER UNIT
15. AREA LIGHTS
16. PARKING STRIPING AS PER R.C. STANDARDS (WITH WHEELSTOP WHERE REQUIRED)
16A. ACCESSIBLE PARKING STRIPING (WITH WHEELSTOP WHERE REQUIRED)
17. ACCESSIBLE PARKING SIGN
18. ACCESSIBLE ACCESSIBLE RAMP
19. ACCESSIBLE TRUNCATED DOME PAVER
20. ACCESSIBLE PATH STRIPING (2% MAX CROSS SLOPE)
21. FIRE TRUCK PATH OF TRAVEL
22. FUEL TANKER/TRASH TRUCK PATH OF TRAVEL
23. RETAINING WALL PER CIVIL
24. 5' HIGH DECORATIVE WALL TO SHIELD AUTO HEADLIGHTS + LIGHT SPILLAGE
25. (N) SIDEWALK
26. (N) RIGHT OF WAY
27. (E) RIGHT OF WAY
28. (E) SIDEWALK

0 2' 4' 8' 16' 32'

1 PROPOSED SITE PLAN
SCALE: 1" = 20'-0"

ASSESSOR'S PARCEL NUMBER

347-130-028 & 347-130-029

LEGAL DESCRIPTION

FIRST AMERICAN TITLE COMPANY
ORDER NO.: 0625-5788488
DATED: SEPTEMBER 11, 2018

LEGAL DESCRIPTION:
REAL PROPERTY IN THE UNINCORPORATED AREA OF THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

PARCEL 3 OF PARCEL MAP 9985, AS SHOWN BY MAP ON FILE IN BOOK 46, PAGE 72 OF PARCEL MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

EXCEPTING THEREFROM A PORTION THAT GRANTS TO RIVERSIDE COUNTY TRANSPORTATION COMMISSION, A POLITICAL SUBDIVISION AS DESCRIBED IN DEED RECORDED OCTOBER 02, 2001 AS INSTRUMENT NO. 2001-478038 OF OFFICIAL RECORDS.

APN: 347-130-029

LEGAL DESCRIPTION:
ORDER NO.: 0625-5789283
DATED: SEPTEMBER 12, 2018

REAL PROPERTY IN THE UNINCORPORATED AREA OF THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

PARCELS 4 OF PARCEL MAP 9985, AS SHOWN BY MAP ON FILE IN BOOK 46, PAGE 72, OF PARCEL MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE RIVERSIDE COUNTY TRANSPORTATION COMMISSION, BY GRANT DEED RECORDED OCTOBER 09, 2001 AS INSTRUMENT NO. 01-489377, OF OFFICIAL RECORDS OF SAID COUNTY.

ASSESSOR'S PARCEL NUMBER: 347-130-028

TOTAL AREA: 62,757.88 S.F. (1.441 ACRES)

PARKING COMPUTATION

PARKING STANDARDS

TYPE	SIZE
REGULAR	9'-0" X 18'-0"
COMPACT	8'-6" X 16'-0" (UP TO 20% OF TOTAL)
HANDICAP	17'-0" X 18'-0" (VAN ACCESSIBLE)

PARKING REQUIREMENTS

USE	FORMULA	REQUIRED	PROVIDED
C-STORE	(1/200 S.F.)	20	22
CANOPY		-	12
TOTAL PARKING		20	34

HANDICAP PARKING REQUIREMENTS

FORMULA	REQUIRED	PROVIDED
26-50 PARKING SPACES	(2)	(2)

CLEAN AIR/ELECTRIC VEHICLE PARKING

FORMULA		
SECTION 17.18.045 R.C. MUN CODE (WITH 25-49 PARKING = 2 EV CHARGING SPACES	(2)	(2)

KARAKI WESTERN STATES ENGINEERING
A DESIGN-BUILD COMPANY
4887 E. LA PALMA STE. 707
ANAHEIM, CA 92807
TEL: (714)695-9300 FAX: (714)693-1002
www.westernsec.com

■ CONSULTANT/ SEALS

REGISTERED PROFESSIONAL ENGINEER — RICHARD B. MCHATTIE — No. C051050 Exp. 9/30/17 — CIVIL — STATE OF CALIFORNIA

■ SUBMITTAL

NO.	DESCRIPTION	BY	DATE
1			
2			
3			
4			

■ REVISIONS

NO.	DESCRIPTION	BY	DATE
△			
△			
△			
△			
△			

■ OWNER NAME & ADDRESS
DAHER OIL INC.
19851 ESPERANZA RD.
YORBA LINDA CA 92886

■ PROJECT NAME & ADDRESS
GAS STATION & CONVENIENCE STORE
28771 CENTRAL AVE. (74 HWY)
LAKE ELSINORE, CA 92532

■ NOTE TO CONTRACTOR
CONTRACTOR TO VERIFY LOCATION AND DEPTH OF ALL UTILITIES ON-SITE AND OFF-SITE PRIOR TO START OF CONSTRUCTION.

■ CONFIDENTIALITY STATEMENT

■ DESIGNED BY: WS
■ DRAWN BY: WS
■ CHECKED BY: JK
■ PLOT DATE: 10.7.2020
■ SCALE: AS SHOWN
■ SHEET TITLE

PROPOSED SITE PLAN

■ SHEET NUMBER

AS-1.0

■ JOB No E99319
■ PAR / CUP No PAR190001

C:\Users\richarddelafuente\Desktop\Replacement\SHEETS\AS-1.0 SITE PLAN 20-10-02.dwg
Plotted: Wednesday, October 07, 2020 3:53 PM Richarddelafuente

Trip Generation Calculation:

Trip Generation Rates

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Super Convenience Market/Gas Station	VFP	960	14.04	14.04	28.08	11.48	11.48	22.96	231

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

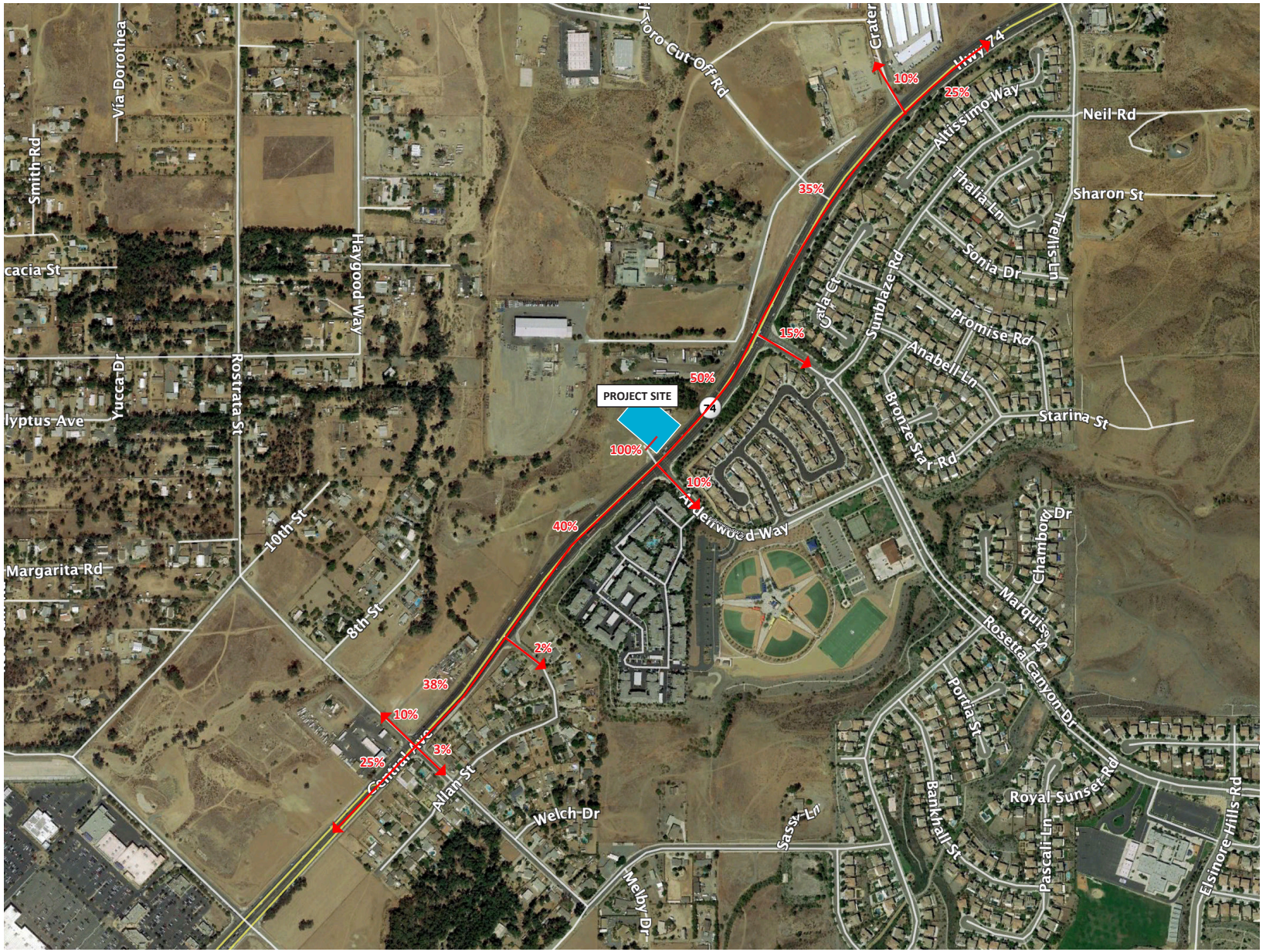
[2] VFP = Vehicle Fueling Positions

Project Trip Generation

Land Use	Intensity	Units[1]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Service Station									
Super Convenience Market/Gas Station	12	VFP	168	168	337	138	138	276	2,766
Pass-by Reduction (62% AM Peak Hour, 56% - PM Peak Hour)[2]			104	104	209	77	77	154	*1,549*
		TOTAL	*64*	*64*	*128*	*61*	*61*	*122*	*1,217*

[1] DU = Dwelling Units; TSF = Thousand Square Feet; VFP = Vehicle Fueling Positions

[2] Pass-by reduction percentage is based on the ITE methodology per Table E of ITE Trip Generation Handbook (3rd Edition, 2017).



INTEGRATED ENGINEERING GROUP
TRANSPORTATION PLANNING AND ENGINEERING

Central Avenue Gas Station
Project Trip Distribution

Counts Unlimited, Inc

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

City of Lake Elsinore
Highway 74
B/ Ardenwood Way - Conard Avenue
24 Hour Directional Volume Count

LKE012
Site Code: 017-14077

Start Time	01-Apr-14 Tue	Eastbound Morning	Eastbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Westbound Morning	Westbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		41	209			22	205				
12:15		40	210			21	203				
12:30		27	204			16	192				
12:45		28	226	136	849	19	226	78	826	214	1675
01:00		23	246			15	215				
01:15		17	244			19	218				
01:30		16	268			15	203				
01:45		22	301	78	1059	13	**288**	62	924	140	1983
02:00		17	246			15	**304**				
02:15		14	255			13	**256**				
02:30		14	306			14	**281**				
02:45		16	356	61	1163	18	233	60	1074	121	2237
03:00		17	330			26	213				
03:15		22	343			24	240				
03:30		13	325			55	276				
03:45		17	345	69	1343	75	242	180	971	249	2314
04:00		27	325			102	240				
04:15		39	342			117	260				
04:30		37	342			145	242				
04:45		55	**442**	158	1451	184	263	548	1005	706	2456
05:00		63	**402**			190	241				
05:15		51	**393**			213	263				
05:30		65	**383**			257	274				
05:45		80	371	259	1549	269	246	929	1024	1188	2573
06:00		113	365			233	215				
06:15		145	300			274	221				
06:30		174	304			278	192				
06:45		198	286	630	1255	303	210	1088	838	1718	2093
07:00		**213**	278			**394**	191				
07:15		**250**	234			**407**	158				
07:30		**319**	228			**394**	151				
07:45		**256**	221	1038	961	**370**	132	1565	632	2603	1593
08:00		187	228			314	111				
08:15		155	212			246	122				
08:30		147	171			255	102				
08:45		156	173	645	784	261	107	1076	442	1721	1226
09:00		146	178			191	82				
09:15		150	130			253	83				
09:30		141	120			257	59				
09:45		161	101	598	529	238	69	939	293	1537	822
10:00		146	103			219	56				
10:15		167	79			200	49				
10:30		204	77			199	52				
10:45		182	79	699	338	199	44	817	201	1516	539
11:00		205	64			193	51				
11:15		172	38			198	35				
11:30		169	48			254	34				
11:45		196	52	742	202	216	19	861	139	1603	341
Total		5113	11483	5113	11483	8203	8369	8203	8369	13316	19852
Combined Total		16596		16596		16572		16572		33168	
AM Peak	-	07:00	-	-	-	07:00	-	-	-	-	-
Vol.	-	1038	-	-	-	1565	-	-	-	-	-
P.H.F.		0.813				0.961					
PM Peak	-	-	04:45	-	-	-	01:45	-	-	-	-
Vol.	-	-	1620	-	-	-	1129	-	-	-	-
P.H.F.			0.916				0.928				
Percentage		30.8%	69.2%			49.5%	50.5%				
ADT/AADT		ADT 33,168		AADT 33,168							

Appendix D:

Construction Noise Modeling Output

Activity	L_{eq} at 134 feet dBA	L_{Max} at 134 feet dBA
Grading	74	78
Building Construction	74	76
Paving	74	76

Equipment Summary	Reference (dBA) 50 ft Lmax
Rock Drills	96
Jack Hammers	82
Pneumatic Tools	85
Source: MD Acoustics, Nov 2020.	80
Dozers	85
Scrappers	87
Haul Trucks	88
Cranes	82
Portable Generators	80
Rollers	80
Tractors	80
Front-End Loaders	86
Hydraulic Excavators	86
Graders	86
Air Compressors	86
Trucks	86

Grading **L_{Max} at 137 feet dBA**

Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements

No.	Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage Factor[1]	Distance to Receptor (ft)	Ground Effect	Shielding (dBA)	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
1	Grader	86	1	40	134	0.5	0	75.3	71.3	13543253.5
2	Dozer	85	1	40	134	0.5	0	74.3	70.3	10757788.6
3	Tractor/Backhoe	80	1	40	134	0.5	0	69.3	65.3	3401911.46
							Lmax*	**78**	**Leq**	**74**
							Lw	**109**	**Lw**	**106**

Source: MD Acoustics, Nov 2020.

1- Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

Feet	Meters	Ground Effect	No Shielding Leq dBA	1 dBA Shielding Leq dBA	2 dBA Shielding Leq dBA	3 dBA Shielding Leq dBA	4 dBA Shielding Leq dBA	5 dBA Shielding Leq dBA	6 dBA Shielding Leq dBA	7 dBA Shielding Leq dBA	8 dBA Shielding Leq dBA	9 dBA Shielding Leq dBA	10 dBA Shielding Leq dBA	11 dBA Shielding LeqdBA	12 dBA Shielding Leq dBA	13 dBA Shielding Leq dBA	14 dBA Shielding Leq dBA	15 dBA Shielding Leq dBA
50	**15.2**	**0.5**	**74**	**73**	**72**	**71**	**70**	**69**	**68**	**67**	**66**	**65**	**64**	**63**	**62**	**61**	**60**	**59**
60	18.3	0.5	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
70	21.3	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
80	24.4	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
90	27.4	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
100	30.5	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
110	33.5	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
120	36.6	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
130	39.6	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
140	42.7	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
150	45.7	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
160	48.8	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
170	51.8	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
180	54.9	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
190	57.9	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
200	61.0	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
210	64.0	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
220	67.1	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
230	70.1	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
240	73.1	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
250	76.2	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
260	79.2	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
270	82.3	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
280	85.3	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
290	88.4	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
300	91.4	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
310	94.5	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
320	97.5	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
330	100.6	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
340	103.6	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
350	106.7	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
360	109.7	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
370	112.8	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38

Building Construction L_{Max} **at 137 feet dBA**

		Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements								
								Calculated (dBA)		
No.	Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage Factor[1]	Distance to Receptor (ft)	Ground Effect	Shielding (dBA)	Lmax	Leq	Energy
1	Cranes	82	2	40	134	0.5	0	74.3	70.3	10783332.6
2	Forklift/Tractor	80	2	40	134	0.5	0	72.3	68.3	6803822.92
3	Generator	80	1	40	134	0.5	0	69.3	65.3	3401911.46
4	Tractor/Backhoe	80	2	40	134	0.5	0	72.3	68.3	6803822.92
							Lmax*	**76**	**Leq**	**74**
							Lw	**108**	**Lw**	**106**

Source: MD Acoustics, Nov 2020.

1- Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

Feet	Meters	Ground Effect	No Shielding Leq dBA	1 dBA Shielding Leq dBA	2 dBA Shielding Leq dBA	3 dBA Shielding Leq dBA	4 dBA Shielding Leq dBA	5 dBA Shielding Leq dBA	6 dBA Shielding Leq dBA	7 dBA Shielding Leq dBA	8 dBA Shielding Leq dBA	9 dBA Shielding Leq dBA	10 dBA Shielding Leq dBA	11 dBA Shielding LeqdBA	12 dBA Shielding Leq dBA	13 dBA Shielding Leq dBA	14 dBA Shielding Leq dBA	15 dBA Shielding Leq dBA
50	**15.2**	**0.5**	**74**	**73**	**72**	**71**	**70**	**69**	**68**	**67**	**66**	**65**	**64**	**63**	**62**	**61**	**60**	**59**
60	18.3	0.5	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
70	21.3	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
80	24.4	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
90	27.4	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
100	30.5	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
110	33.5	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
120	36.6	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
130	39.6	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
140	42.7	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
150	45.7	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
160	48.8	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
170	51.8	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
180	54.9	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
190	57.9	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
200	61.0	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
210	64.0	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
220	67.1	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
230	70.1	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
240	73.1	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
250	76.2	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
260	79.2	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
270	82.3	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
280	85.3	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
290	88.4	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
300	91.4	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
310	94.5	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
320	97.5	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
330	100.6	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
340	103.6	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
350	106.7	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
360	109.7	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
370	112.8	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38

Paving **L_{Max} at 137 feet dBA**

Noise Level Calculation Prior to Implementation of Noise Attenuation Requirements

No.	Equipment Description	Reference (dBA) 50 ft Lmax	Quantity	Usage Factor[1]	Distance to Receptor (ft)	Ground Effect	Shielding (dBA)	Calculated (dBA) Lmax	Calculated (dBA) Leq	Energy
1	Pavers	86	1	40	134	0.5	0	75.3	71.3	13543253.5
2	Rollers	80	1	40	134	0.5	0	69.3	65.3	3401911.46
3	Paving Equipment	80	1	40	134	0.5	0	69.3	65.3	3401911.46
4	Tractor/Backhoe	80	1	40	134	0.5	0	72.3	68.3	6803822.92
							Lmax*	**76**	**Leq**	**74**
							Lw	**108**	**Lw**	**106**

Source: MD Acoustics, Nov 2020.

1- Percentage of time that a piece of equipment is operating at full power.

dBA – A-weighted Decibels

Lmax- Maximum Level

Leq- Equivalent Level

Feet	Meters	Ground Effect	No Shielding Leq dBA	1 dBA Shielding Leq dBA	2 dBA Shielding Leq dBA	3 dBA Shielding Leq dBA	4 dBA Shielding Leq dBA	5 dBA Shielding Leq dBA	6 dBA Shielding Leq dBA	7 dBA Shielding Leq dBA	8 dBA Shielding Leq dBA	9 dBA Shielding Leq dBA	10 dBA Shielding Leq dBA	11 dBA Shielding LeqdBA	12 dBA Shielding Leq dBA	13 dBA Shielding Leq dBA	14 dBA Shielding Leq dBA	15 dBA Shielding Leq dBA
50	**15.2**	**0.5**	**74**	**73**	**72**	**71**	**70**	**69**	**68**	**67**	**66**	**65**	**64**	**63**	**62**	**61**	**60**	**59**
60	18.3	0.5	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57
70	21.3	0.5	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56
80	24.4	0.5	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54
90	27.4	0.5	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53
100	30.5	0.5	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52
110	33.5	0.5	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51
120	36.6	0.5	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50
130	39.6	0.5	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49
140	42.7	0.5	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48
150	45.7	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
160	48.8	0.5	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47
170	51.8	0.5	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46
180	54.9	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
190	57.9	0.5	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45
200	61.0	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
210	64.0	0.5	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44
220	67.1	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
230	70.1	0.5	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43
240	73.1	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
250	76.2	0.5	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42
260	79.2	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
270	82.3	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
280	85.3	0.5	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41
290	88.4	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
300	91.4	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
310	94.5	0.5	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
320	97.5	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
330	100.6	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
340	103.6	0.5	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39
350	106.7	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
360	109.7	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38
370	112.8	0.5	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38

VIBRATION LEVEL IMPACT

Project:	Lake Elsinore Gas and Store	Date: 1/12/21
Source:	Large Bulldozer	
Scenario:	Unmitigated	
Location:	Project Site	
Address:		

PPV = PPVref(25/D)^n (in/sec)

DATA INPUT

Equipment = Type	2	Large Bulldozer	INPUT SECTION IN BLUE
PPVref =	0.089	Reference PPV (in/sec) at 25 ft.	
D =	96.00	Distance from Equipment to Receiver (ft)	
n =	1.10	Vibration attenuation rate through the ground	

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

DATA OUT RESULTS

PPV =	**0.020**	IN/SEC	OUTPUT IN RED