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NOISE IMPACT ANALYSIS

TENTATIVE TRACT MAP NO. 38237 DISCOVERY RESIDENTIAL PROJECT

CITY OF MORENO VALLEY

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ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Moreno Valley
cmu	concrete masonry unit
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	A-weighted decibels
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
EPA	Environmental Protection Agency
Hz	Hertz
Ldn	Day-night average noise level
Leq	Equivalent sound level
Lmax	Maximum noise level
OSHA	Occupational Safety and Health Administration
PPV	Peak particle velocity
RMS	Root mean square
SEL	Single Event Level or Sound Exposure Level
STC	Sound Transmission Class
TTM	Tentative Tract Map
VdB	Vibration velocity level in decibels

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Noise Impact Analysis has been prepared to determine the noise impacts associated with the proposed Tentative Tract Map (TTM) No. 38237 Discovery Residential project (proposed project). The following is provided in this report:

- A description of the study area and the proposed project;
- Information regarding the fundamentals of noise;
- Information regarding the fundamentals of vibration;
- A description of the local noise guidelines and standards;
- An evaluation of the current noise environment;
- An analysis of the potential short-term construction-related noise impacts from the proposed project; and
- An analysis of long-term operations-related noise impacts from the proposed project.

1.2 Site Location and Study Area

The project site is located in the City of Moreno Valley (City), on the northeast corner of the intersection of Oliver Street and Brodiaea Avenue. The 8.8 gross acre project site is currently vacant and is bounded by Discovery Christian Church to the north, single-family homes (currently under construction) to the east, Brodiaea Avenue and rural residential to the south, and Oliver Street and vacant land to the west. The project study area is shown in Figure 1.

Sensitive Receptors in Project Vicinity

The nearest sensitive receptor to the project site is a church located adjacent to the northern boundary of the site, where the nearest structure is 65 feet north of the project site. There is also a single-family home located as near as 85 feet to the south of the project site. The nearest K-12 school is La Jolla Elementary School, which is located as near as 0.4 mile south of the project site.

1.3 Proposed Project Description

The proposed project would consist of a residential development that would include 67 detached single-family homes with a 0.56-acre open space park along the north side of the project site and two detention basins on the south side of the project site as well as an onsite roadway system. The proposed site plan is shown in Figure 2.

1.4 Executive Summary

Standard Noise Regulatory Conditions

The proposed project will be required to comply with the following regulatory conditions from the City and State of California (State).

City of Moreno Valley Noise Regulations

The following lists the noise and vibration regulations from the Municipal Code that are applicable, but not limited to the proposed project.

- Section 9.10.030 Temporary Construction Exemptions;
- Section 9.10.170 Vibration;
- Section 11.80.030(B)(2) Sound Level Limits.

State of California Noise Regulations

The following lists the State of California noise regulations that are applicable, but not limited to the proposed project.

- California Vehicle Code Section 27200-27207 – On Road Vehicle Noise Limits
- California Vehicle Code Section 38365-38350 – Off-Road Vehicle Noise Limits

Summary of Analysis Results

The following is a summary of the proposed project's impacts with regard to the State CEQA Guidelines noise checklist questions.

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

Less than significant impact.

Generation of excessive groundborne vibration or groundborne noise levels?

Less than significant impact.

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

No impact.

1.5 Mitigation Measures for the Proposed Project

This analysis found that through adherence to the noise and vibration regulations detailed in Section 1.4 above, were adequate to limit all noise and vibration impacts to less than significant levels. No mitigation measures are required for the proposed project with respect to noise and vibration impacts.

SOURCE: Google Maps.

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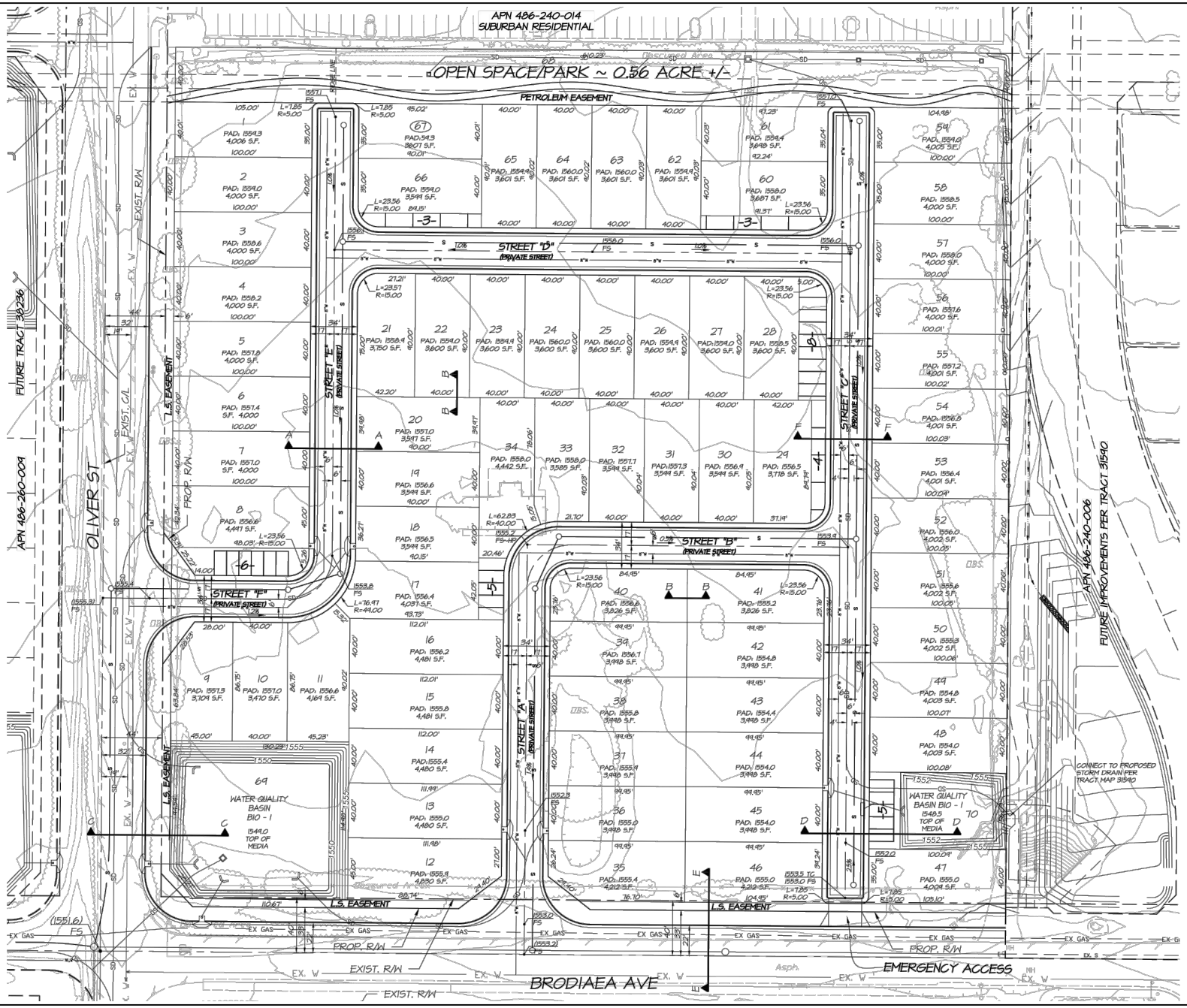
Figure 1
Project Location Map



SOURCE: Adkan Engineers.

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Figure 2
Proposed Site Plan

2.0 NOISE FUNDAMENTALS

Noise is defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit which expresses the ratio of the sound pressure level being measured to a standard reference level. A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

2.1 Noise Descriptors

Noise Equivalent sound levels are not measured directly, but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The worst-hour traffic Leq is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses.

The Day-Night Average Level (Ldn) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of ten decibels to sound levels at night between 10 p.m. and 7 a.m. While the Community Noise Equivalent Level (CNEL) is similar to the Ldn, except that it has 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 time periods because during the evening and nighttime hours, when compared to daytime hours, there is a decrease in the ambient noise levels, which creates an increased sensitivity to sounds. For this reason the sound appears louder in the evening and nighttime hours and is weighted accordingly. The City of Moreno Valley relies on the CNEL noise standard to assess transportation-related impacts on noise sensitive land uses.

2.2 Tone Noise

A pure tone noise is a noise produced at a single frequency and laboratory tests have shown that humans are more perceptible to changes in noise levels of a pure tone. For a noise source to contain a “pure tone,” there must be a significantly higher A-weighted sound energy in a given frequency band than in the neighboring bands, thereby causing the noise source to “stand out” against other noise sources. A pure tone occurs if the sound pressure level in the one-third octave band with the tone exceeds the average of the sound pressure levels of the two contiguous one-third octave bands by:

- 5 dB for center frequencies of 500 hertz (Hz) and above
- 8 dB for center frequencies between 160 and 400 Hz
- 15 dB for center frequencies of 125 Hz or less

2.3 Noise Propagation

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in level of noise as the distance from the source increases. The manner in which the noise level reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features.

Sound from point sources, such as air conditioning condensers, radiate uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD) between source and receiver. Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

2.4 Ground Absorption

The sound drop-off rate is highly dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA/DD is typically observed over soft ground with landscaping, as compared with a 6.0 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3.0 dBA/DD drop-off rate for hard-site conditions. Caltrans research has shown that the use of soft-site conditions is more appropriate for the application of the Federal Highway Administration (FHWA) traffic noise prediction model used in this analysis.

3.0 GROUND-BORNE VIBRATION FUNDAMENTALS

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.

3.1 Vibration Descriptors

There are several different methods that are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (rms) amplitude of the vibration velocity. Due to the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels and is denoted as (L_v) and is based on the rms velocity amplitude. A commonly used abbreviation is "VdB", which in this text, is when L_v is based on the reference quantity of 1 micro inch per second.

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. Off-site 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.

3.3 Vibration Propagation

The propagation of ground-borne vibration is not as simple to model as airborne noise. This is due to the fact that noise in the air travels through a relatively uniform medium, while ground-borne vibrations travel through the earth which may contain significant geological differences. 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 wave front, 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 wave front. 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 wave front. 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 project site is located in the City of Moreno Valley. 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:

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

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC 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 (OSHA) agency prohibits exposure of workers to excessive sound levels. The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA), which regulates transit noise, while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (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.

4.2 State Regulations

Noise Standards

California Department of Health Services Office of Noise Control

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," which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise. The Community Noise Compatibility Matrix that was adopted by the City is shown in Figure 3.

California Noise Insulation Standards

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 such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required

Table N-1: Community Noise Compatibility Matrix

Land Use Category	*Community Noise Exposure (CNEL)*						
	55	60	65	70	75	80	
Residential – Low Density Single Family, Duplex, Mobile Homes	A		B	C	D		
Residential – Multiple Family	A		B	C	D		
Transient Lodging: Hotels and Motels	A		B	C		D	
Schools, Libraries, Churches, Hospitals, Nursing Homes	A			C		D	
Auditoriums, Concert Halls, Amphitheaters	B			C			
Sports Arena, Outdoor Spectator Sports	B				C		
Playground, Neighborhood Parks	A			B	C		
Golf Courses, Riding Stables, Water Recreation, Cemeteries	A				C	D	
Office Buildings, Businesses, Commercial and Professional	A			B	C		
Industrial, Manufacturing, Utilities, Agricultural	A				B	C	

A — 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.

B — Conditionally Acceptable:
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

C — 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 needed noise insulation features included in the design.

D — Clearly Unacceptable:
New construction or development should generally not be undertaken.

Source: Governor's Office of Planning and Research 2017.

SOURCE: City of Moreno Valley, 2021.

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Figure 3
City of Moreno Valley Community Noise Compatibility Matrix

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 shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302

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.

California Vehicle Code Section 27200-27207 – On-Road Vehicle Noise

California Vehicle Code Section 27200-27207 provides noise limits for vehicles operated in California. For vehicles over 10,000 pounds noise is limited to 88 dB for vehicles manufactured before 1973, 86 dB for vehicles manufactured before 1975, 83 dB for vehicles manufactured before 1988, and 80 dB for vehicles manufactured after 1987. All measurements are based at 50 feet from the vehicle.

California Vehicle Section 38365-38380 – Off-Road Vehicle Noise

California Vehicle Code Section 38365-38380 provides noise limits for off-highway motor vehicles operated in California. 92 dBA for vehicles manufactured before 1973, 88 dBA for vehicles manufactured before 1975, 86 dBA for vehicles manufactured before 1986, and 82 dBA for vehicles manufactured after December 31, 1985. All measurements are based at 50 feet from the vehicle.

Vibration Standards

Title 14 of the California Administrative Code Section 15000 requires that all state and local agencies implement the California Environmental Quality Act (CEQA) Guidelines, which requires the analysis of exposure of persons to excessive groundborne vibration. However, no statute has been adopted by the state that quantifies the level at which excessive groundborne vibration occurs.

The *Transportation- and Construction Vibration Guidance Manual*, prepared by Caltrans, April 2020, provides practical guidance to Caltrans engineers, planners, and consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. However, this manual is also used as a reference point by many lead agencies and CEQA practitioners throughout California, as it provides numeric thresholds for vibration impacts. Thresholds are established for continuous (construction-related) and transient (transportation-related) sources of vibration, which found that the human response becomes distinctly perceptible at 0.25 inch per second PPV for transient sources and 0.04 inch per second PPV for continuous sources.

4.3 Local Regulations

The *City of Moreno Valley General Plan 2040* (General Plan 2040), adopted June 15, 2021 and Municipal Code establishes the following applicable policies related to noise and vibration.

City of Moreno Valley General Plan

The following applicable goals and policies to the proposed residential project are from the Noise Element of the General Plan 2040.

Goal N-1: Design for a pleasant, healthy sound environment conducive to living and working.

Policies

N.1-1 Protect occupants of existing and new buildings from exposure to excessive noise, particularly adjacent to freeways, major roadways, the railroad, and within areas of aircraft overflight.

N.1-3 Apply the community noise compatibility standards (Table N-1[see Figure 3 above]) to all new development and major redevelopment projects outside the noise and safety compatibility zones established in the March Air Reserve Base/Inland Port Airport Land Use Compatibility (ALUC) Plan in order to protect against the adverse effects of noise exposure. Projects within the noise and safety compatibility zones are subject to the standards contained in the ALUC Plan.

N.1-4 Require a noise study and/or mitigation measures if applicable for all projects that would expose people to noise levels greater than the "normally acceptable" standard and for any other projects that are likely to generate noise in excess of these standards.

N.1-7 Developers shall reduce the noise impacts on new development through appropriate means (e.g. double-paned or soundproof windows, setbacks, berming, and screening). Noise attenuation methods should avoid the use of visible sound walls where possible.

Goal N-2: Ensure that noise does not have a substantial, adverse effect on the quality of life in the community.

Policies

N.2-1 Use the development review process to proactively identify and address potential noise compatibility issues.

N.2-3 Limit the potential noise impacts of construction activities on surrounding land uses through noise regulations in the Municipal Code that address allowed days and hours of construction, types of work, construction equipment, and sound attenuation devices.

City of Moreno Valley Municipal Code

The City of Moreno Valley Municipal Code establishes the following applicable standards related to noise.

Section 9.10.010 Performance Standards - Purpose and Intent

The purpose and intent of this chapter is to explicitly describe the location, configuration, design, amenities, operation and other standards for proposed development projects that may impact the surrounding neighborhood. The performance standards set maximum tolerance limits on certain adverse effects created by any use or development of land.

Section 9.10.030 Performance Standards - Exemptions

The following uses or activities are exempt from the provisions of this chapter:

A. Emergency equipment, vehicles, devices and activities.

B. Temporary construction, maintenance, or demolition activities between the hours of seven a.m. and seven p.m.

Section 9.10.170 Performance Standards - Vibration

No vibration shall be permitted which can be felt at or beyond the property line.

Section 11.80.030 Prohibited Acts

A. General Prohibition. It is unlawful and a violation of this chapter to maintain, make, cause, or allow the making of any sound that causes a noise disturbance, as defined in Section 11.80.020.

B. Sound causing permanent hearing loss.

1. Sound level limits. Based on statistics from the Center for Disease Control and Prevention and the National Institute for Occupational Safety and Health, Table 1 and Table 1-A specify sound level limits which, if exceeded, will have a high probability of producing permanent hearing loss in anyone in the area where the sound levels are being exceeded. No sound shall be permitted within the city which exceeds the parameters set for in Tables 11.80.030-1 [see Table A] and 11.80.030-1-A [see Table B] of this chapter:

Table A – City of Moreno Valley Maximum Continuous Sound Levels

Duration per Day (Continuous Hours)	Sound Level [dB(A)]
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25	115

Source: City of Moreno Valley Municipal Code Section 11.80.030.

Table B – City of Moreno Valley Maximum Impulsive Sound Levels

Number of Repetitions per 24-Hour Period	Sound Level [dB(A)]
1	145
10	135
100	125

Source: City of Moreno Valley Municipal Code Section 11.80.030.

C. Nonimpulsive Sound Decibel Limits. No person shall maintain, create, operate or cause to be operated on private property any source of sound in such a manner as to create any nonimpulsive sound which exceeds the limits set forth for the source land use category (as defined in Section 11.80.020) in Table 11.80.030-2 [see Table C] when measured at a distance of two hundred (200) feet or more from the real

property line of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on public right-of-way, public space or other publicly owned property. Any source of sound in violation of this subsection shall be deemed prima facie to be a noise disturbance.

Table C – City of Moreno Valley Maximum Sound Levels for Source Land Uses

Residential		Commercial	
Daytime[1]	**Nightime[2]**	**Daytime[1]**	**Nightime[2]**
60	55	65	60

Notes:
[1] Daytime defined as 8:00 a.m. to 10:00 p.m.
[2] Nighttime define as 10:01 p.m. to 7:59 a.m. the following day.
Source: City of Moreno Valley Municipal Code Section 11.80.030.

D. Specific Prohibitions. In addition to the general prohibitions set out in subsection A of this section, and unless otherwise exempted by this chapter, the following specific acts, or the causing or permitting thereof, are regulated as follows:

7. Construction and Demolition. No person shall operate or cause the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of 8 p.m. and 7 a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee. This section shall not apply to the use of power tools as provided in subsection (D)(9) of this section.

5.0 EXISTING NOISE CONDITIONS

To determine the existing noise levels, noise measurements have been taken in the vicinity of the project site. The field survey noted that noise within the proposed project area is generally characterized by vehicle traffic on Oliver Street that is adjacent to the west side of the project site and Brodiaea Avenue that is adjacent to the south side of the project site. The following describes the measurement procedures, measurement locations, noise measurement results, and the modeling of the existing noise environment.

5.1 Noise Measurement Equipment

The noise measurements were taken using two Extech Model 407780 Type 2 integrating sound level meters programmed in "slow" mode to record the sound pressure level at 3-second intervals for approximately 24 hours in "A" weighted form. In addition, the Leq averaged over the entire measuring time and Lmax were recorded. The sound level meters and microphones were mounted approximately three to six feet above the ground and were equipped with a windscreen. The sound level meters were calibrated before and after the monitoring using an Extech calibrator, Model 407766. The noise level measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (ANSI S1.4-2014 standard).

Noise Measurement Locations

The noise monitoring locations were selected in order to obtain noise levels in the vicinity of the project site. Descriptions of the noise monitoring sites are provided below in Table D and are shown in Figure 4. Appendix A includes a photo index of the study area and noise level measurement locations.

Noise Measurement Timing and Climate

The noise measurements were recorded between 3:50 p.m. on Wednesday, September 22, 2021 and 3:55 p.m. on Thursday, September 23, 2021. At the start of the noise measurements, the sky was partly cloudy, the temperature was 100 degrees Fahrenheit, the humidity was 29 percent, barometric pressure was 28.32 inches of mercury, and the wind was blowing around eight miles per hour. Overnight, the temperature dropped to 68 degrees Fahrenheit and the humidity peaked at 56 percent. At the conclusion of the noise measurements, the sky was hazy, the temperature was 96 degrees Fahrenheit, the humidity was 31 percent, barometric pressure was 28.19 inches of mercury, and the wind was blowing around six miles per hour.

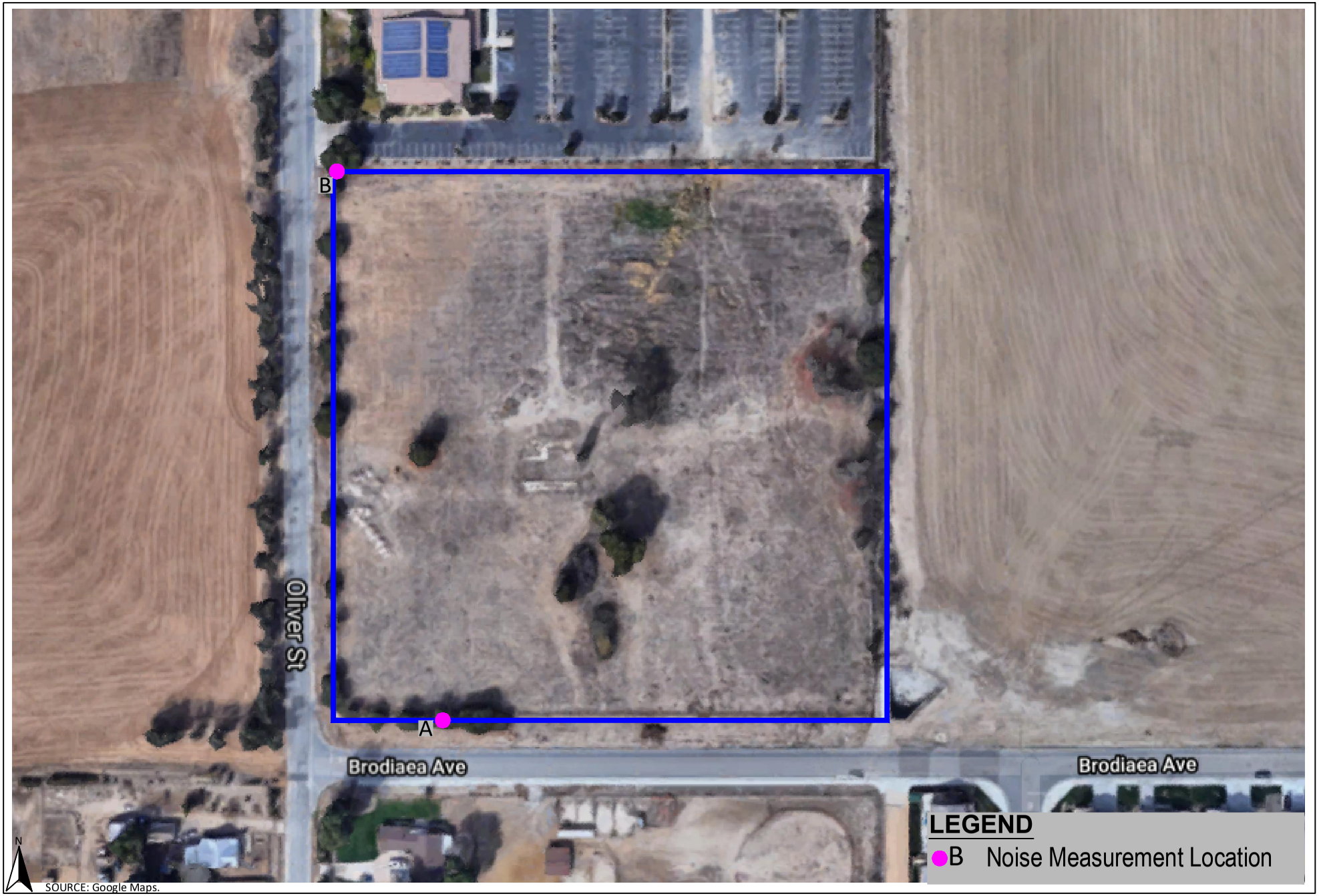
5.2 Noise Measurement Results

The results of the noise level measurements are presented in Table D. The measured sound pressure levels in dBA have been used to calculate the minimum and maximum L_{eq} averaged over 1-hour intervals. Table D also shows the L_{eq}, L_{max}, and CNEL, based on the entire measurement time. The CNEL was calculated through use of Equation 2-23 from *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (TeNS), prepared by Caltrans, September 2013. The noise monitoring data printouts are included in Appendix B. Figure 5 shows a graph of the 24-hour noise measurements.

Table D – Existing (Ambient) Noise Measurement Results

Site No.	Site Description	Average (dBA L_{eq})	Maximum (dBA L_{max})	(dBA $L_{eq\ 1\text{-}hour}$/Time) Minimum	(dBA $L_{eq\ 1\text{-}hour}$/Time) Maximum	Average (dBA CNEL)
A	Located on a tree on the south side of the project site, approximately 45 feet north of Brodiaea Avenue centerline and 155 feet east of Oliver Street centerline.	53.5	82.5	41.5 2:06 a.m.	59.0 7:22 a.m.	58.8
B	Located on a fence at the northwest corner of the project site, approximately 40 feet east of Oliver Street centerline.	60.9	85.3	48.2 2:28 a.m.	66.1 10:57 a.m.	63.6

Source: Noise measurements were taken with two Extech Model 407780 Type 2 sound level meters from Wednesday, September 22, 2021 to Thursday, September 23, 2021.



SOURCE: Google Maps.

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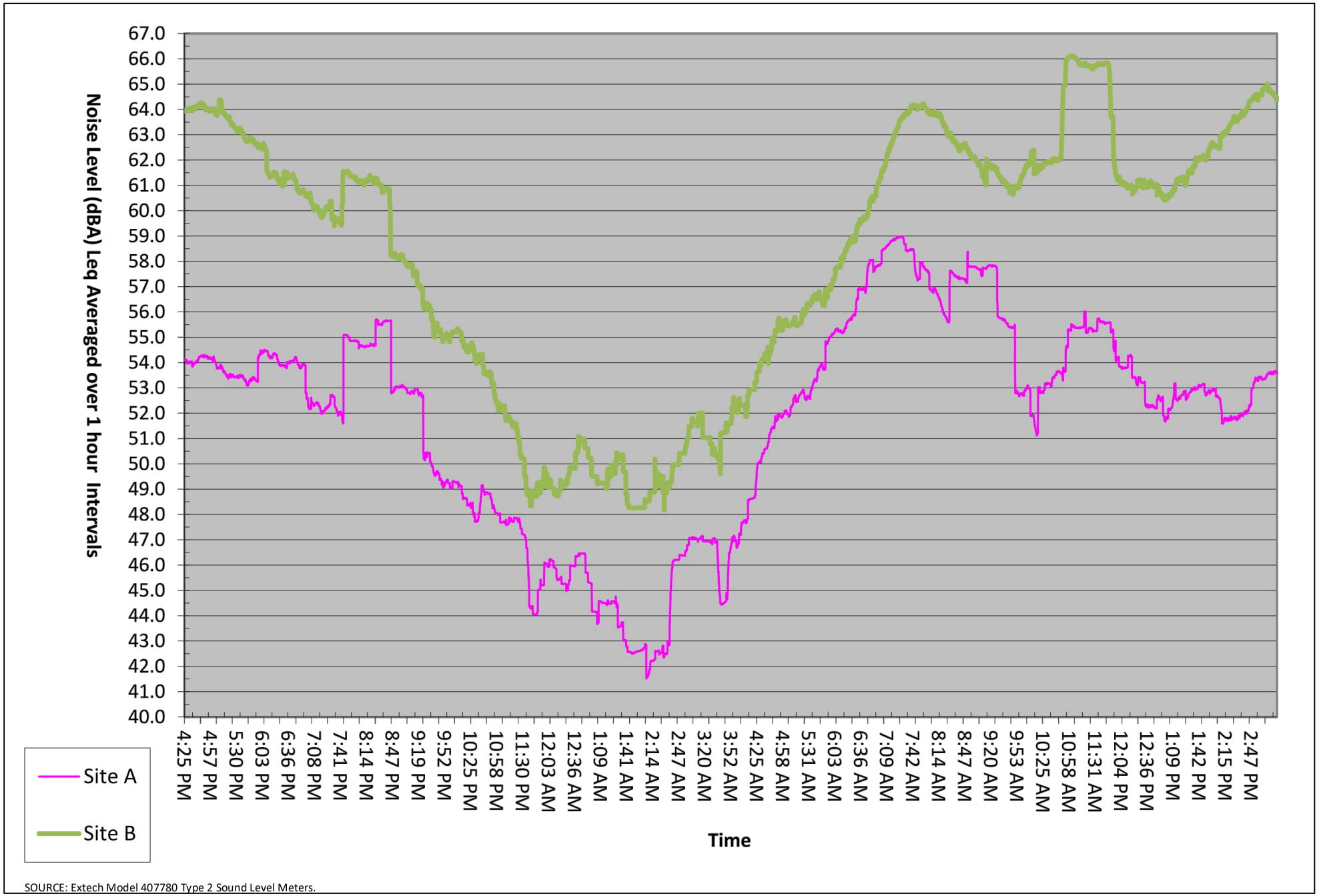
Figure 4
Field Noise Monitoring Locations



SOURCE: Extech Model 407780 Type 2 Sound Level Meters.

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Figure 5
Field Noise Measurements Graph

6.0 MODELING PARAMETERS AND ASSUMPTIONS

6.1 Construction Noise

The noise impacts from construction of the proposed project have been analyzed through use of the FHWA's Roadway Construction Noise Model (RCNM). 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 E below provides a list of the construction equipment anticipated to be used for each phase of construction that was obtained from the *Air Quality, Energy, and Greenhouse Gas Impact Analysis Tentative Tract Map No. 38237 Discovery Residential Project* (Air Quality Analysis), prepared by Vista Environmental, October 27, 2021.

Table E – Construction Equipment Noise Emissions and Usage Factors

Equipment Description	Number of Equipment	Acoustical Use Factor[1] (percent)	Spec 721.560 Lmax at 50 feet[2] (dBA, slow[3])	Actual Measured Lmax at 50 feet[4] (dBA, slow[3])
Site Preparation				
Rubber Tired Dozers	3	40	85	82
Tractor, Loader, or Backhoes	4	40	84	N/A
Grading				
Excavators	1	40	85	81
Grader	1	40	85	83
Rubber Tired Dozer	1	40	85	82
Tractor, Loader, or Backhoes	3	40	85	82
Building Construction				
Crane	1	16	85	81
Forklift (Gradall)	3	40	85	83
Generator	1	50	82	81
Tractor, Loader or Backhoes	3	40	84	N/A
Welder	1	40	73	74
Paving				
Paver	2	50	85	77
Paving Equipment	2	50	85	77
Roller	2	20	85	80
Architectural Coating				
Air Compressor	1	40	80	78

Notes:
[1] Acoustical use factor is the percentage of time each piece of equipment is operational during a typical workday.
[2] Spec 721.560 is the equipment noise level utilized by the RCNM program.
[3] The "slow" response averages sound levels over 1-second increments. A "fast" response averages sound levels over 0.125-second increments.
[4] 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 and CalEEMod default equipment mix.

Table E shows the associated measured noise emissions for each piece of equipment from the RCNM model and measured percentage of typical equipment use per day. Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels and usage factors listed Table E and through use of the RCNM.

For each phase of construction, the two nosiest pieces of construction equipment were analyzed based on being placed in the middle of the project site, which is based on the analysis methodology detailed in FTA Manual for a General Assessment. In order to account for Section 11.80.030(C) of the Municipal Code, each receiver was placed 200 feet back from the project site property lines. The RCNM model printouts are provided in Appendix C.

6.2 Operations-Related Noise

FHWA Model Methodology

The proposed project would result in increases in traffic noise to the nearby roadways as well as introduce new sensitive receptors to the project site. The project impacts to the offsite roadways were analyzed through use of the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108 (FHWA Model). The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). 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 which flows during the day, evening and night, the travel speed, the vehicle mix on the roadway, which is 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 site conditions ("hard" or "soft" relates to the absorption of the ground, pavement or landscaping). The following section provides a discussion of the software and modeling input parameters used in this analysis and a discussion of the resultant existing noise model.

FHWA Model Traffic Noise Prediction Model Inputs

The roadway parameters used for this study are presented in Table F. The roadway classifications are based on the City's General Plan Circulation Element. The roadway speeds are based on the posted speed limits. The distance to the nearest sensitive receptor was determined by measuring the distance from the roadway centerline to the nearest residence. Since the study area is located in a suburban environment and landscaping or natural vegetation exists along the sides of Oliver Street, soft site conditions were modeled. It should be noted that Brodiaea Avenue is classified as a local roadway that consists of low traffic volumes at slower speeds and the traffic noise from Brodiaea Avenue would not make a significant contribution to the noise environment, as such the noise level from Brodiaea Avenue was not analyzed.

Table F – FHWA Model Roadway Parameters

Roadway	Segment	General Plan Classification	Vehicle Speed (MPH)	Distance to Nearest Receptor[1] (feet)
Oliver Street	South of Alessandro Boulevard	Minor Arterial	40	60

Notes:
[1] Distance measured from nearest offsite residential structure to centerline of roadway.
Source: City of Moreno Valley, 2021.

The average daily traffic (ADT) volumes for the without project conditions were obtained from Appendix D: Noise Output of the *Draft Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update, Housing Element Update, and Climate Action Plan Public Review Draft* (MoVal 2040 DEIR), April 2, 2021. The ADT for the with project conditions were calculated by adding the project trip generation rate of 632 daily trips that was obtained from the *Project Scoping Form*, prepared

by EPD Solutions, October 2021, to the without project ADT volumes. The ADT volumes used in this analysis are shown in Table G.

Table G – Average Daily Traffic Volumes

Roadway	Segment	Average Daily Traffic Volumes			
		Existing	Existing + Project	Year 2040 No Project	Year 2040 + Project
Oliver Street	South of Alessandro Boulevard	3,957	4,589	4,409	5,041

Source: City of Moreno Valley, 2021; EPD Solutions, Inc., 2021.

The vehicle mix used in the FHWA-RD-77-108 Model is shown in Table H and was obtained from Appendix D of the MoVal 2040 DEIR for Oliver Street. The vehicle mix provides the hourly distribution percentages of automobiles, medium trucks, and heavy trucks for input into the FHWA model.

Table H – Oliver Street Vehicle Mix

Vehicle Type	Traffic Flow Distributions			
	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
Automobiles	76.44%	3.92%	17.64%	98.00%
Medium Trucks	0.78%	0.04%	0.18%	1.00%
Heavy Trucks	0.78%	0.04%	0.18%	1.00%

Source: City of Moreno Valley, 2021.

FHWA Model Source Assumptions

To assess the roadway noise generation in a uniform manner, all vehicles are analyzed at the single lane equivalent acoustic center of the roadway being analyzed. In order to determine the height above the road grade where the noise is being emitted from, 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.

6.3 Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to damage at the highest levels. Table I gives approximate vibration levels for particular construction activities. The data in Table I provides a reasonable estimate for a wide range of soil conditions.

Table I – Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity (inches/second)	Approximate Vibration Level (L_v)at 25 feet
Pile driver (impact)	Upper range	1.518	112
	typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Vibratory Roller		0.210	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

Source: Federal Transit Administration, 2018.

The construction-related vibration impacts have been calculated through the vibration levels shown above in Table I and through typical vibration propagation rates. The equipment assumptions were based on the equipment lists provided above in Table E.

7.0 IMPACT ANALYSIS

7.1 CEQA Thresholds of Significance

Consistent with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generation of excessive groundborne vibration or groundborne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

7.2 Generation of Noise Levels in Excess of Standards

The proposed project would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The following section calculates the potential noise emissions associated with the temporary construction activities and long-term operations of the proposed project and compares the noise levels to the City standards.

Construction-Related Noise

The construction activities for the proposed project are anticipated to include site preparation and grading of the 8.8 gross acre project site, building construction of the 67 single-family homes, paving of the onsite roads and road improvements to Oliver Street and Brodiaea Avenue and application of architectural coatings. Noise impacts from construction activities associated with the proposed project 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 nearest sensitive receptor to the project site is a church located adjacent to the north side, where the nearest structure is 65 feet north of the project site. There is also a single-family home located as near as 85 feet to the south of the project site.

Section 11.80.030(C) of the City's Municipal Code limits all noise sources, including construction noise to 60 dBA at the nearby residential uses and 65 dBA at the nearby commercial uses, including church uses during the daytime. Section 11.80.030(D)(7) of the City's Municipal Code provides additional prohibitions on construction activities by restricting construction activities from occurring between the hours of 8:00 p.m. and 7:00 a.m..

Construction noise impacts to the nearby sensitive receptors have been calculated through use of the RCNM and the parameters and assumptions detailed in Section 6.1 of this report including Table E – Construction Equipment Noise Emissions and Usage Factors. The results are shown below in Table J and the RCNM printouts are provided in Appendix C.

Table J – Construction Noise Levels at the Nearby Sensitive Receptors

Construction Phase	Construction Noise Level[1] (dBA Leq) at:	
	Home to South	Church to North
Site Preparation	57	62
Grading	58	63
Building Construction	57	63
Paving	51	56
Painting	48	53
City's Noise Threshold[2]	**60**	**65**
Exceed Thresholds?	**No**	**No**

Notes:
[1] The distance from the center of the project site to the north and south sides of the project site is 320 feet. Pursuant to Section 11.80.030(C) of the Municipal Code an additional 200 feet was added, which result in both the home to south and church to north analyzed at 520 feet. For the home to the south, in order to account for the structures that are located within 200 feet of the project site property line, 5 dB of shielding was added to the RCNM Model.
[2] City Noise Threshold obtained from Section 11.80.030(C) of the Municipal Code.
Source: RCNM, Federal Highway Administration, 2006

Table J shows that the greatest noise impacts would occur during the grading phase, with a noise level as high as 58 dBA Leq at 200 feet from the property line to the nearest homes, which is within the City's residential noise threshold of 60 dBA and as high as 63 dBA at 200 feet from the property line to the church to the noise of the project site, which is within the City's commercial noise threshold of 65 dBA. Through adherence to the limitation of allowable construction times provided in Section 9.10.030(B) of the City's Municipal Code, the construction-related noise levels would not exceed any standards. Therefore, impacts would be less than significant.

Operational-Related Noise

The proposed project would consist of the development of 67 detached single-family homes. Potential noise impacts associated with the operations of the proposed project would be from project-generated vehicular traffic on the nearby roadways. In addition, the proposed development would be adjacent to Oliver Street, which may create exterior and interior noise levels in excess of City standards at the proposed homes. The noise impacts to the nearby existing homes and proposed homes have been analyzed separately below.

Roadway Vehicular Noise Impact to Nearby Homes

Vehicle noise is a combination of the noise produced by the engine, exhaust and tires. The level of traffic noise depends on three primary factors (1) the volume of traffic, (2) the speed of traffic, and (3) the number of trucks in the flow of traffic. The proposed project does not propose any uses that would require a substantial number of truck trips and the proposed project would not alter the speed limit on any existing roadway so the proposed project's potential offsite noise impacts have been focused on the noise impacts associated with the change of volume of traffic that would occur with development of the proposed project.

General Plan Policy N.1-1, requires the protection of occupants of existing and new homes from excessive noise from roadways. Since the General Plan does not quantify what is a significant roadway noise increase, the roadway noise threshold utilized in the MoVal 2040 FEIR, has been utilized, which details that a significant noise increase would occur if the project would:

- Increase noise levels by 5 dB or more where the no project noise level is less than 60 CNEL;
- Increase noise levels by 3 dB or more where the no project noise level is 60 CNEL to 65 CNEL; or
- Increase noise levels by 1.5 dB or more where the no project noise level is greater than 65 CNEL.

The potential offsite traffic noise impacts created by the on-going operations of the proposed project have been analyzed through utilization of the FHWA model and parameters described above in Section 6.2 and the FHWA model traffic noise calculation spreadsheets are provided in Appendix D. The proposed project's potential offsite traffic noise impacts have been analyzed for the existing year and future year 2040 scenarios that are discussed separately below.

Existing Year Conditions

The proposed project's potential offsite traffic noise impacts have been calculated through a comparison of the Existing scenario to the Existing With Project scenario. The results of this comparison are shown in Table K.

Table K – Existing Project Traffic Noise Contributions

		dBA CNEL at Nearest Receptor[1]			
Roadway	Segment	Existing	Existing Plus Project	Project Contribution	Increase Threshold[2]
Oliver Street	South of Alessandro Boulevard	60.2	60.8	+0.6	+3 dB

Notes:
[1] Distance to nearest sensitive receptors shown in Table F, does not take into account existing noise barriers.
[2] Increase Threshold obtained from MoVal 2040 DEIR, 2021.
Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

Table K shows that the proposed project's permanent noise increases to the nearby homes from the generation of additional vehicular traffic would not exceed the traffic noise increase thresholds detailed above. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels for the existing conditions. Impacts would be less than significant.

Future Year 2040 Conditions

The proposed project's potential offsite traffic noise impacts have been calculated through a comparison of the future year 2040 scenario to the future year 2040 with project scenario. The results of this comparison are shown in Table L.

Table L – Future Year 2040 Project Traffic Noise Contributions

		dBA CNEL at Nearest Receptor[1]			
Roadway	Segment	Year 2040	Year 2040 Plus Project	Project Contribution	Increase Threshold[2]
Oliver Street	South of Alessandro Boulevard	60.7	61.2	+0.5	+3 dB

Notes:
[1] Distance to nearest sensitive receptors shown in Table F, does not take into account existing noise barriers.
[2] Increase Threshold obtained from MoVal 2040 DEIR, 2021.
Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108.

Table L shows that the proposed project's permanent noise increases to the nearby homes from the generation of additional vehicular traffic would not exceed the traffic noise increase thresholds detailed above. Therefore, the proposed project would not result in a substantial permanent increase in ambient noise levels for the future year 2040 conditions. Impacts would be less than significant.

Roadway Vehicular Noise Impacts to Proposed Homes

The proposed project would consist of the development of a residential community with 67 detached single-family homes. General Plan Policy N-1.4 requires that new developments within the City to meet the "normally acceptable" standard. As shown above in Figure 3, the "normally acceptable" noise standard for single-family homes is 65 dBA CNEL or less.

It is anticipated that the primary source of noise impacts to the project site will be traffic noise from Oliver Street that is adjacent to the west side of the project site. It should be noted that Brodiaea Avenue is classified as a local roadway that consists of low traffic volumes at slower speeds and the traffic noise from Brodiaea Avenue would not make a significant contribution to the noise environment, as such the noise level from Brodiaea Avenue was not analyzed. The FHWA traffic noise prediction model parameters used in this analysis are discussed above in detail in Section 6.2 and the FHWA model printouts are provided in Appendix E. The anticipated noise levels have been calculated for backyards that are adjacent to Oliver Street for representative lots and the results are shown below in Table M.

Table M – Proposed Homes Exterior Noise Levels from Oliver Street

Building Number	Roadway	Exterior Noise Levels (dBA CNEL)		Wall Height Analyzed[1] (feet)
		Without Sound Wall	With Sound Wall	
1	Oliver Street	61	54	6.0
4	Oliver Street	61	53	6.0
8	Oliver Street	61	53	6.0
9	Oliver Street	61	52	6.0

Notes:
[1] Although not shown on Site Plan, the City typically requires construction of a 6-foot high cmu wall adjacent to Minor Arterial roadways.
Exceedance of City's 65 dBA CNEL residential exterior noise standard shown in **bold**.
Source: FHWA RD-77-108 Model.

Table M shows that the noise levels at all proposed homes backyards adjacent to Oliver Street would be within the City's 65 dBA CNEL residential exterior noise standard for the without and with the proposed sound wall conditions. Impacts would be less than significant.

Level of Significance

Less than significant impact.

7.3 Generation of Excessive Groundborne Vibration

The proposed project would not expose persons to or generation of excessive groundborne vibration or groundborne noise levels. The following section analyzes the potential vibration impacts associated with the construction and operations of the proposed project.

Construction-Related Vibration Impacts

The construction activities for the proposed project are anticipated to include site preparation and grading of the 8.8 gross acre project site, building construction of the 67 single-family homes, paving of the onsite roads and road improvements to Oliver Street and Brodiaea Avenue and application of architectural coatings. Vibration impacts from construction activities associated with the proposed project would typically be created from the operation of heavy off-road equipment. The nearest sensitive receptor to the project site is a church located adjacent to the north side, where the nearest structure is 65 feet north of the project site.

Chapter 9.10 of the Municipal Code includes performance standards for proposed development projects that may impact the surrounding neighborhood and Section 9.10.030(B), which is part of this Chapter, exempts temporary construction activities from Section 9.10.170 that restricts the creation of vibration that can be felt at the property line, provided that construction activities occur between the hours of 7 a.m. and 7 p.m.. Since the City's Municipal does not provide a quantifiable vibration level for construction activities, Caltrans guidance that is detailed above in Section 4.2 has been utilized, which defines the threshold of perception from transient sources at 0.25 inch per second PPV.

The primary source of vibration during construction would be from the operation of a bulldozer. From Table I above a large bulldozer would create a vibration level of 0.089 inch per second PPV at 25 feet. Based on typical propagation rates, the vibration level at the nearest offsite structure (65 feet to the north) would be 0.03 inch per second PPV. The vibration level at the nearest offsite structure would be below the 0.25 inch per second PPV threshold detailed above. Impacts would be less than significant.

Operations-Related Vibration Impacts

The proposed project would consist of the development of 67 single-family homes. The on-going operation of the proposed project would not include the operation of any known vibration sources other than typical onsite vehicle operations for a residential development. Therefore, a less than significant vibration impact is anticipated from operation of the proposed project.

Level of Significance

Less than significant impact.

7.4 Aircraft Noise

The proposed project may expose people residing in the project area to excessive noise levels from aircraft. The nearest airport is March Air Reserve Base that is located as near as 4.5 miles southwest of the project site. The project site is located outside of the 60 dBA CNEL noise contours of this airport. Therefore, the proposed homes would not be exposed to excessive aircraft noise. No impact would occur from aircraft noise.

Level of Significance

No impact.

8.0 REFERENCES

California Department of Transportation, *2016 Annual Average Daily Truck Traffic on the California State Highway System*, 2018.

California Department of Transportation (Caltrans), *Technical Noise Supplement to the Traffic Noise Analytics Protocol*, September 2013.

California Department of Transportation, *Transportation- and Construction Vibration Guidance Manual*, April 2020.

City of Moreno Valley, *City of Moreno Valley General Plan 2040,* adopted June 15, 2021.

City of Moreno Valley, *Final Environmental Impact Report for the MoVal 2040: Moreno Valley Comprehensive Plan Update, Housing Element Update, and Climate Action Plan*, May 20, 2021.

City of Moreno Valley, *City of Moreno Valley Municipal Code*, December 2018.

EPD Solutions, Inc., *City of Moreno Valley Traffic Impact Preparation Guide Project Scoping Form,* October, 2021.

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment,* May 2006.

U.S. Department of Transportation, *FHWA Roadway Construction Noise Model User's Guide,* January, 2006.

U.S. Department of Transportation, *Highway Traffic Noise: Analysis and Abatement Guidance,* December, 2011.

Vista Environmental, *Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis Tentative Tract Map No. 38237 Discovery Residential Project*, October 27, 2021

APPENDIX A

Field Noise Measurements Photo Index

Noise Measurement Site A - looking north

Noise Measurement Site A - looking northeast

Noise Measurement Site A - looking east

Noise Measurement Site A - looking southeast

Noise Measurement Site A - looking south

Noise Measurement Site A - looking southwest

Noise Measurement Site A - looking west

Noise Measurement Site A - looking northwest

Noise Measurement Site B - looking north

Noise Measurement Site B - looking northeast

Noise Measurement Site B - looking east

Noise Measurement Site B - looking southeast

Noise Measurement Site B - looking south

Noise Measurement Site B - looking southwest

Noise Measurement Site B - looking west

Noise Measurement Site B - looking northwest

APPENDIX B

Field Noise Measurements Printouts

Site A - On South Side of Project Site

Date	Time=09/22/21	3:50:00 PM			
Sampling	Time=3	Weighting=A			
Record	Num= 28800	Weighting=Slow	CNEL(24hr)=	58.0	
Leq	53.5 SEL	Value=103.0	Ldn(24hr)=	57.6	
MAX	82.5	Min Leq1hr =	41.5	2:06 AM	
MIN	33.6	Max Leq1hr =	59.0	7:22 AM	

Site A - On South Side of Project Site

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
54	15:50:00		54	54.0
56.4	15:50:03		56.4	56.4
57.1	15:50:06		57.1	57.1
57	15:50:09		57	57.0
57.4	15:50:12		57.4	57.4
58.9	15:50:15		58.9	58.9
64.3	15:50:18		64.3	64.3
59.5	15:50:21		59.5	59.5
57.6	15:50:24		57.6	57.6
58.6	15:50:27		58.6	58.6
60.1	15:50:30		60.1	60.1
64.4	15:50:33		64.4	64.4
63.5	15:50:36		63.5	63.5
56.5	15:50:39		56.5	56.5
58.1	15:50:42		58.1	58.1
58.5	15:50:45		58.5	58.5
56.4	15:50:48		56.4	56.4
59.7	15:50:51		59.7	59.7
59.9	15:50:54		59.9	59.9
63.8	15:50:57		63.8	63.8
64.4	15:51:00		64.4	64.4
64.6	15:51:03		64.6	64.6
63.1	15:51:06		63.1	63.1
65.2	15:51:09		65.2	65.2
58.4	15:51:12		58.4	58.4
57.7	15:51:15		57.7	57.7
51.2	15:51:18		51.2	51.2
49.2	15:51:21		49.2	49.2
52.3	15:51:24		52.3	52.3
60.2	15:51:27		60.2	60.2
58.9	15:51:30		58.9	58.9
51.3	15:51:33		51.3	51.3
49	15:51:36		49	49.0
47.4	15:51:39		47.4	47.4
47.1	15:51:42		47.1	47.1
48.2	15:51:45		48.2	48.2
51.4	15:51:48		51.4	51.4
47.2	15:51:51		47.2	47.2
51.7	15:51:54		51.7	51.7
48.4	15:51:57		48.4	48.4
48.8	15:52:00		48.8	48.8
49.1	15:52:03		49.1	49.1
50	15:52:06		50	50.0
59.1	15:52:09		59.1	59.1
57.6	15:52:12		57.6	57.6
52.3	15:52:15		52.3	52.3
50.5	15:52:18		50.5	50.5
49.9	15:52:21		49.9	49.9
48.8	15:52:24		48.8	48.8
51	15:52:27		51	51.0
48.2	15:52:30		48.2	48.2
48.4	15:52:33		48.4	48.4
49.4	15:52:36		49.4	49.4
49.5	15:52:39		49.5	49.5
51.2	15:52:42		51.2	51.2
52.4	15:52:45		52.4	52.4
52	15:52:48		52	52.0
57.6	15:52:51		57.6	57.6
56.3	15:52:54		56.3	56.3
59.2	15:52:57		59.2	59.2
51.9	15:53:00		51.9	51.9
47.3	15:53:03		47.3	47.3
45.7	15:53:06		45.7	45.7
47.3	15:53:09		47.3	47.3
50.1	15:53:12		50.1	50.1
56.5	15:53:15		56.5	56.5
50.5	15:53:18		50.5	50.5
58.5	15:53:21		58.5	58.5
66.1	15:53:24		66.1	66.1
56.1	15:53:27		56.1	56.1
49.5	15:53:30		49.5	49.5
48.9	15:53:33		48.9	48.9
48.5	15:53:36		48.5	48.5
58.9	15:53:39		58.9	58.9
53.7	15:53:42		53.7	53.7
59.5	15:53:45		59.5	59.5
52	15:53:48		52	52.0

Site B - Northwest Corner of Project Site

Date	Time=09/22/21	3:55:00 PM			
Sampling	Time=3	Freq Weighting=A			
Record	Num= 28800	Weighting=Slow	CNEL(24hr)=	63.6	
Leq	60.9 SEL	Value=110.2	Ldn(24hr)=	63.2	
MAX	85.3	Min Leq1hr =	48.2	2:28 AM	
MIN	36.3	Max Leq1hr =	66.1	10:57 AM	

Site B - Northwest Corner of Project Site

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
57.2	15:55:00		57.2	57.2
62.3	15:55:03		62.3	62.3
63.8	15:55:06		63.8	63.8
63.3	15:55:09		63.3	63.3
58.1	15:55:12		58.1	58.1
57.4	15:55:15		57.4	57.4
61.4	15:55:18		61.4	61.4
57.9	15:55:21		57.9	57.9
63.9	15:55:24		63.9	63.9
64.8	15:55:27		64.8	64.8
61.7	15:55:30		61.7	61.7
62	15:55:33		62	62
55.9	15:55:36		55.9	55.9
57.2	15:55:39		57.2	57.2
56.8	15:55:42		56.8	56.8
57.1	15:55:45		57.1	57.1
63.4	15:55:48		63.4	63.4
63.6	15:55:51		63.6	63.6
69.4	15:55:54		69.4	69.4
66.8	15:55:57		66.8	66.8
59.8	15:56:00		59.8	59.8
58.4	15:56:03		58.4	58.4
66.6	15:56:06		66.6	66.6
60.2	15:56:09		60.2	60.2
60.7	15:56:12		60.7	60.7
61.8	15:56:15		61.8	61.8
63.5	15:56:18		63.5	63.5
65.6	15:56:21		65.6	65.6
63.9	15:56:24		63.9	63.9
59.5	15:56:27		59.5	59.5
59	15:56:30		59	59
58.5	15:56:33		58.5	58.5
57.5	15:56:36		57.5	57.5
56	15:56:39		56	56
56.3	15:56:42		56.3	56.3
56.1	15:56:45		56.1	56.1
55.4	15:56:48		55.4	55.4
54.8	15:56:51		54.8	54.8
55.4	15:56:54		55.4	55.4
53.8	15:56:57		53.8	53.8
54.2	15:57:00		54.2	54.2
58.7	15:57:03		58.7	58.7
69.7	15:57:06		69.7	69.7
62.8	15:57:09		62.8	62.8
68.3	15:57:12		68.3	68.3
61.1	15:57:15		61.1	61.1
72	15:57:18		72	72
64.6	15:57:21		64.6	64.6
58.9	15:57:24		58.9	58.9
67.5	15:57:27		67.5	67.5
65.5	15:57:30		65.5	65.5
59.8	15:57:33		59.8	59.8
54.1	15:57:36		54.1	54.1
52.8	15:57:39		52.8	52.8
51.8	15:57:42		51.8	51.8
52.8	15:57:45		52.8	52.8
53.4	15:57:48		53.4	53.4
52.8	15:57:51		52.8	52.8
51.9	15:57:54		51.9	51.9
52.3	15:57:57		52.3	52.3
52.5	15:58:00		52.5	52.5
53.9	15:58:03		53.9	53.9
56.9	15:58:06		56.9	56.9
69.4	15:58:09		69.4	69.4
64	15:58:12		64	64
59.2	15:58:15		59.2	59.2
54.5	15:58:18		54.5	54.5
54.7	15:58:21		54.7	54.7
55.6	15:58:24		55.6	55.6
53.9	15:58:27		53.9	53.9
53.6	15:58:30		53.6	53.6
53.7	15:58:33		53.7	53.7
52.7	15:58:36		52.7	52.7
53.7	15:58:39		53.7	53.7
54.3	15:58:42		54.3	54.3
56.5	15:58:45		56.5	56.5
67.5	15:58:48		67.5	67.5

Site A - On South Side of Project Site					Site B - Northwest Corner of Project Site				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
50.4	15:53:51		50.4	50.4	63.6	15:58:51		63.6	63.6
48.1	15:53:54		48.1	48.1	58.2	15:58:54		58.2	58.2
46.8	15:53:57		46.8	46.8	53.5	15:58:57		53.5	53.5
46.5	15:54:00		46.5	46.5	52.2	15:59:00		52.2	52.2
48.5	15:54:03		48.5	48.5	51.7	15:59:03		51.7	51.7
47.8	15:54:06		47.8	47.8	52.6	15:59:06		52.6	52.6
60.2	15:54:09		60.2	60.2	51.3	15:59:09		51.3	51.3
60.3	15:54:12		60.3	60.3	51.6	15:59:12		51.6	51.6
62.7	15:54:15		62.7	62.7	51.7	15:59:15		51.7	51.7
53.2	15:54:18		53.2	53.2	52	15:59:18		52	52
57.2	15:54:21		57.2	57.2	53.2	15:59:21		53.2	53.2
58	15:54:24		58	58.0	52.5	15:59:24		52.5	52.5
53.5	15:54:27		53.5	53.5	52.3	15:59:27		52.3	52.3
58.7	15:54:30		58.7	58.7	51.9	15:59:30		51.9	51.9
53.1	15:54:33		53.1	53.1	52.3	15:59:33		52.3	52.3
53.7	15:54:36		53.7	53.7	52.8	15:59:36		52.8	52.8
49.6	15:54:39		49.6	49.6	54.2	15:59:39		54.2	54.2
53.3	15:54:42		53.3	53.3	53	15:59:42		53	53
63.3	15:54:45		63.3	63.3	75.4	15:59:45		75.4	75.4
59.3	15:54:48		59.3	59.3	58.6	15:59:48		58.6	58.6
56.9	15:54:51		56.9	56.9	56.3	15:59:51		56.3	56.3
55.5	15:54:54		55.5	55.5	71.3	15:59:54		71.3	71.3
60.8	15:54:57		60.8	60.8	63.3	15:59:57		63.3	63.3
61.2	15:55:00		61.2	61.2	54.8	16:00:00		54.8	54.8
53.9	15:55:03		53.9	53.9	52.6	16:00:03		52.6	52.6
49.7	15:55:06		49.7	49.7	51.9	16:00:06		51.9	51.9
49.3	15:55:09		49.3	49.3	52.2	16:00:09		52.2	52.2
49.5	15:55:12		49.5	49.5	53.5	16:00:12		53.5	53.5
50	15:55:15		50	50.0	65.6	16:00:15		65.6	65.6
50.1	15:55:18		50.1	50.1	63.2	16:00:18		63.2	63.2
54.8	15:55:21		54.8	54.8	60	16:00:21		60	60
56	15:55:24		56	56.0	70.4	16:00:24		70.4	70.4
53.9	15:55:27		53.9	53.9	62.8	16:00:27		62.8	62.8
56	15:55:30		56	56.0	58.7	16:00:30		58.7	58.7
60.7	15:55:33		60.7	60.7	56.3	16:00:33		56.3	56.3
62.3	15:55:36		62.3	62.3	56.7	16:00:36		56.7	56.7
56.5	15:55:39		56.5	56.5	59.8	16:00:39		59.8	59.8
55.5	15:55:42		55.5	55.5	69.1	16:00:42		69.1	69.1
61.3	15:55:45		61.3	61.3	70.6	16:00:45		70.6	70.6
54.5	15:55:48		54.5	54.5	65.6	16:00:48		65.6	65.6
55	15:55:51		55	55.0	72.1	16:00:51		72.1	72.1
56.1	15:55:54		56.1	56.1	62.6	16:00:54		62.6	62.6
56.6	15:55:57		56.6	56.6	58.2	16:00:57		58.2	58.2
59.3	15:56:00		59.3	59.3	71.6	16:01:00		71.6	71.6
57.2	15:56:03		57.2	57.2	58.2	16:01:03		58.2	58.2
54.4	15:56:06		54.4	54.4	55.4	16:01:06		55.4	55.4
54	15:56:09		54	54.0	55.4	16:01:09		55.4	55.4
52.7	15:56:12		52.7	52.7	56.1	16:01:12		56.1	56.1
51.2	15:56:15		51.2	51.2	54.3	16:01:15		54.3	54.3
51	15:56:18		51	51.0	58.9	16:01:18		58.9	58.9
50.1	15:56:21		50.1	50.1	58.5	16:01:21		58.5	58.5
50	15:56:24		50	50.0	58.6	16:01:24		58.6	58.6
50.1	15:56:27		50.1	50.1	57.9	16:01:27		57.9	57.9
50.6	15:56:30		50.6	50.6	63.5	16:01:30		63.5	63.5
50.1	15:56:33		50.1	50.1	68.3	16:01:33		68.3	68.3
50.5	15:56:36		50.5	50.5	68.7	16:01:36		68.7	68.7
52.6	15:56:39		52.6	52.6	61.9	16:01:39		61.9	61.9
51.4	15:56:42		51.4	51.4	56.5	16:01:42		56.5	56.5
53	15:56:45		53	53.0	55.4	16:01:45		55.4	55.4
51.1	15:56:48		51.1	51.1	56.5	16:01:48		56.5	56.5
49.1	15:56:51		49.1	49.1	55	16:01:51		55	55
50.3	15:56:54		50.3	50.3	54.9	16:01:54		54.9	54.9
49.1	15:56:57		49.1	49.1	55	16:01:57		55	55
49.3	15:57:00		49.3	49.3	53.2	16:02:00		53.2	53.2
48.9	15:57:03		48.9	48.9	53.2	16:02:03		53.2	53.2
49.6	15:57:06		49.6	49.6	53.6	16:02:06		53.6	53.6
48.6	15:57:09		48.6	48.6	53.6	16:02:09		53.6	53.6
49.2	15:57:12		49.2	49.2	53.2	16:02:12		53.2	53.2
49.2	15:57:15		49.2	49.2	54.9	16:02:15		54.9	54.9
49.9	15:57:18		49.9	49.9	54.8	16:02:18		54.8	54.8
49.6	15:57:21		49.6	49.6	53.2	16:02:21		53.2	53.2
49.7	15:57:24		49.7	49.7	55.1	16:02:24		55.1	55.1
50.5	15:57:27		50.5	50.5	52.6	16:02:27		52.6	52.6
52.7	15:57:30		52.7	52.7	52.8	16:02:30		52.8	52.8
51.9	15:57:33		51.9	51.9	54	16:02:33		54	54
49.9	15:57:36		49.9	49.9	55.7	16:02:36		55.7	55.7
50.2	15:57:39		50.2	50.2	56.9	16:02:39		56.9	56.9
51.8	15:57:42		51.8	51.8	67.7	16:02:42		67.7	67.7
60.4	15:57:45		60.4	60.4	67.3	16:02:45		67.3	67.3
66.1	15:57:48		66.1	66.1	60.5	16:02:48		60.5	60.5
61.2	15:57:51		61.2	61.2	56.2	16:02:51		56.2	56.2
52.2	15:57:54		52.2	52.2	55.9	16:02:54		55.9	55.9
48.3	15:57:57		48.3	48.3	54.9	16:02:57		54.9	54.9
53	15:58:00		53	53.0	55.5	16:03:00		55.5	55.5
63.3	15:58:03		63.3	63.3	54.8	16:03:03		54.8	54.8
60.4	15:58:06		60.4	60.4	53.7	16:03:06		53.7	53.7
50.1	15:58:09		50.1	50.1	53.5	16:03:09		53.5	53.5
47.4	15:58:12		47.4	47.4	53.3	16:03:12		53.3	53.3

Site A - On South Side of Project Site					Site B - Northwest Corner of Project Site				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
47.3	15:58:15		47.3	47.3	52.2	16:03:15		52.2	52.2
47.2	15:58:18		47.2	47.2	51.8	16:03:18		51.8	51.8
48.3	15:58:21		48.3	48.3	50.8	16:03:21		50.8	50.8
47.7	15:58:24		47.7	47.7	52.8	16:03:24		52.8	52.8
47.3	15:58:27		47.3	47.3	53.2	16:03:27		53.2	53.2
50.8	15:58:30		50.8	50.8	52.5	16:03:30		52.5	52.5
51.6	15:58:33		51.6	51.6	53.6	16:03:33		53.6	53.6
53.3	15:58:36		53.3	53.3	55.2	16:03:36		55.2	55.2
51.1	15:58:39		51.1	51.1	61.4	16:03:39		61.4	61.4
48.7	15:58:42		48.7	48.7	73.5	16:03:42		73.5	73.5
47.9	15:58:45		47.9	47.9	65.2	16:03:45		65.2	65.2
51.7	15:58:48		51.7	51.7	57.2	16:03:48		57.2	57.2
49	15:58:51		49	49.0	53.5	16:03:51		53.5	53.5
48.5	15:58:54		48.5	48.5	53.4	16:03:54		53.4	53.4
49.3	15:58:57		49.3	49.3	54.9	16:03:57		54.9	54.9
49.1	15:59:00		49.1	49.1	54.9	16:04:00		54.9	54.9
48.1	15:59:03		48.1	48.1	54	16:04:03		54	54
49.1	15:59:06		49.1	49.1	52.9	16:04:06		52.9	52.9
47.6	15:59:09		47.6	47.6	53	16:04:09		53	53
48.5	15:59:12		48.5	48.5	52	16:04:12		52	52
52.9	15:59:15		52.9	52.9	52.1	16:04:15		52.1	52.1
49.8	15:59:18		49.8	49.8	53	16:04:18		53	53
46.3	15:59:21		46.3	46.3	53.3	16:04:21		53.3	53.3
47	15:59:24		47	47.0	52.7	16:04:24		52.7	52.7
46.4	15:59:27		46.4	46.4	52.9	16:04:27		52.9	52.9
45.7	15:59:30		45.7	45.7	52.3	16:04:30		52.3	52.3
46.4	15:59:33		46.4	46.4	53.2	16:04:33		53.2	53.2
46.1	15:59:36		46.1	46.1	56.9	16:04:36		56.9	56.9
46.7	15:59:39		46.7	46.7	65.5	16:04:39		65.5	65.5
46.9	15:59:42		46.9	46.9	75.7	16:04:42		75.7	75.7
48.1	15:59:45		48.1	48.1	72.2	16:04:45		72.2	72.2
48.4	15:59:48		48.4	48.4	63	16:04:48		63	63
47.4	15:59:51		47.4	47.4	57.1	16:04:51		57.1	57.1
49.6	15:59:54		49.6	49.6	54.4	16:04:54		54.4	54.4
53.1	15:59:57		53.1	53.1	53.1	16:04:57		53.1	53.1
53.3	16:00:00		53.3	53.3	52.2	16:05:00		52.2	52.2
52	16:00:03		52	52.0	54	16:05:03		54	54
52.5	16:00:06		52.5	52.5	55.5	16:05:06		55.5	55.5
48.9	16:00:09		48.9	48.9	54.5	16:05:09		54.5	54.5
48.9	16:00:12		48.9	48.9	54.4	16:05:12		54.4	54.4
48.1	16:00:15		48.1	48.1	53.4	16:05:15		53.4	53.4
47.8	16:00:18		47.8	47.8	53.1	16:05:18		53.1	53.1
46.8	16:00:21		46.8	46.8	55.1	16:05:21		55.1	55.1
46.5	16:00:24		46.5	46.5	62.1	16:05:24		62.1	62.1
46.2	16:00:27		46.2	46.2	70	16:05:27		70	70
47	16:00:30		47	47.0	62.9	16:05:30		62.9	62.9
46.3	16:00:33		46.3	46.3	55.3	16:05:33		55.3	55.3
47.5	16:00:36		47.5	47.5	53.3	16:05:36		53.3	53.3
48.4	16:00:39		48.4	48.4	54.3	16:05:39		54.3	54.3
50.1	16:00:42		50.1	50.1	54.7	16:05:42		54.7	54.7
61.1	16:00:45		61.1	61.1	70.5	16:05:45		70.5	70.5
64.5	16:00:48		64.5	64.5	70.7	16:05:48		70.7	70.7
57.7	16:00:51		57.7	57.7	59.1	16:05:51		59.1	59.1
58.2	16:00:54		58.2	58.2	51.8	16:05:54		51.8	51.8
52.1	16:00:57		52.1	52.1	51.6	16:05:57		51.6	51.6
51.9	16:01:00		51.9	51.9	51.4	16:06:00		51.4	51.4
50.4	16:01:03		50.4	50.4	51.3	16:06:03		51.3	51.3
49.4	16:01:06		49.4	49.4	49.8	16:06:06		49.8	49.8
48.6	16:01:09		48.6	48.6	50.2	16:06:09		50.2	50.2
50	16:01:12		50	50.0	50.4	16:06:12		50.4	50.4
49.5	16:01:15		49.5	49.5	51	16:06:15		51	51
49.3	16:01:18		49.3	49.3	51.2	16:06:18		51.2	51.2
49.7	16:01:21		49.7	49.7	51.4	16:06:21		51.4	51.4
49.7	16:01:24		49.7	49.7	51.9	16:06:24		51.9	51.9
48.8	16:01:27		48.8	48.8	51	16:06:27		51	51
48.8	16:01:30		48.8	48.8	51	16:06:30		51	51
48.5	16:01:33		48.5	48.5	51.4	16:06:33		51.4	51.4
47.4	16:01:36		47.4	47.4	51.4	16:06:36		51.4	51.4
48.9	16:01:39		48.9	48.9	49.1	16:06:39		49.1	49.1
49.1	16:01:42		49.1	49.1	48.6	16:06:42		48.6	48.6
48.6	16:01:45		48.6	48.6	48.7	16:06:45		48.7	48.7
48.6	16:01:48		48.6	48.6	48.9	16:06:48		48.9	48.9
48.9	16:01:51		48.9	48.9	48.4	16:06:51		48.4	48.4
50.3	16:01:54		50.3	50.3	49.5	16:06:54		49.5	49.5
49.3	16:01:57		49.3	49.3	48.5	16:06:57		48.5	48.5
49.7	16:02:00		49.7	49.7	47.8	16:07:00		47.8	47.8
53.8	16:02:03		53.8	53.8	47.1	16:07:03		47.1	47.1
59.8	16:02:06		59.8	59.8	47.7	16:07:06		47.7	47.7
56.5	16:02:09		56.5	56.5	50.7	16:07:09		50.7	50.7
50	16:02:12		50	50.0	62.6	16:07:12		62.6	62.6
47.4	16:02:15		47.4	47.4	67.7	16:07:15		67.7	67.7
46.7	16:02:18		46.7	46.7	59.7	16:07:18		59.7	59.7
46.2	16:02:21		46.2	46.2	69.6	16:07:21		69.6	69.6
46	16:02:24		46	46.0	71.1	16:07:24		71.1	71.1
45.6	16:02:27		45.6	45.6	62.6	16:07:27		62.6	62.6
47.4	16:02:30		47.4	47.4	72.7	16:07:30		72.7	72.7
45.7	16:02:33		45.7	45.7	69.1	16:07:33		69.1	69.1
46.1	16:02:36		46.1	46.1	71.3	16:07:36		71.3	71.3

Site A - On South Side of Project Site					Site B - Northwest Corner of Project Site				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
47	16:02:39		47	47.0	64.1	16:07:39		64.1	64.1
45.7	16:02:42		45.7	45.7	54.8	16:07:42		54.8	54.8
45.6	16:02:45		45.6	45.6	52.9	16:07:45		52.9	52.9
45.8	16:02:48		45.8	45.8	56.3	16:07:48		56.3	56.3
47	16:02:51		47	47.0	53.8	16:07:51		53.8	53.8
47.5	16:02:54		47.5	47.5	51.9	16:07:54		51.9	51.9
48.6	16:02:57		48.6	48.6	52.5	16:07:57		52.5	52.5
49	16:03:00		49	49.0	52.1	16:08:00		52.1	52.1
51.2	16:03:03		51.2	51.2	52.9	16:08:03		52.9	52.9
51.3	16:03:06		51.3	51.3	54.5	16:08:06		54.5	54.5
55.6	16:03:09		55.6	55.6	66.4	16:08:09		66.4	66.4
50.6	16:03:12		50.6	50.6	64.9	16:08:12		64.9	64.9
51.2	16:03:15		51.2	51.2	56.4	16:08:15		56.4	56.4
49.3	16:03:18		49.3	49.3	53	16:08:18		53	53
47.4	16:03:21		47.4	47.4	53	16:08:21		53	53
47.9	16:03:24		47.9	47.9	52.6	16:08:24		52.6	52.6
48.1	16:03:27		48.1	48.1	52.2	16:08:27		52.2	52.2
48.6	16:03:30		48.6	48.6	52.9	16:08:30		52.9	52.9
47.5	16:03:33		47.5	47.5	53.3	16:08:33		53.3	53.3
47.3	16:03:36		47.3	47.3	52.7	16:08:36		52.7	52.7
48.2	16:03:39		48.2	48.2	51.9	16:08:39		51.9	51.9
49.4	16:03:42		49.4	49.4	53.2	16:08:42		53.2	53.2
54.2	16:03:45		54.2	54.2	52.5	16:08:45		52.5	52.5
57.1	16:03:48		57.1	57.1	54.7	16:08:48		54.7	54.7
52.3	16:03:51		52.3	52.3	58	16:08:51		58	58
49.3	16:03:54		49.3	49.3	57.7	16:08:54		57.7	57.7
49.3	16:03:57		49.3	49.3	57.5	16:08:57		57.5	57.5
48.9	16:04:00		48.9	48.9	57.6	16:09:00		57.6	57.6
47.5	16:04:03		47.5	47.5	56.7	16:09:03		56.7	56.7
45.6	16:04:06		45.6	45.6	57.1	16:09:06		57.1	57.1
46.9	16:04:09		46.9	46.9	57.4	16:09:09		57.4	57.4
52	16:04:12		52	52.0	59.6	16:09:12		59.6	59.6
59.4	16:04:15		59.4	59.4	71.6	16:09:15		71.6	71.6
68.3	16:04:18		68.3	68.3	63.7	16:09:18		63.7	63.7
64.1	16:04:21		64.1	64.1	57.5	16:09:21		57.5	57.5
57.3	16:04:24		57.3	57.3	57.6	16:09:24		57.6	57.6
55	16:04:27		55	55.0	58.4	16:09:27		58.4	58.4
55.3	16:04:30		55.3	55.3	58.1	16:09:30		58.1	58.1
60.9	16:04:33		60.9	60.9	57.3	16:09:33		57.3	57.3
59.4	16:04:36		59.4	59.4	55.9	16:09:36		55.9	55.9
60.7	16:04:39		60.7	60.7	56.1	16:09:39		56.1	56.1
54.8	16:04:42		54.8	54.8	56.8	16:09:42		56.8	56.8
52.8	16:04:45		52.8	52.8	56.7	16:09:45		56.7	56.7
52.4	16:04:48		52.4	52.4	58.9	16:09:48		58.9	58.9
55.2	16:04:51		55.2	55.2	57.1	16:09:51		57.1	57.1
51.2	16:04:54		51.2	51.2	56.6	16:09:54		56.6	56.6
49.8	16:04:57		49.8	49.8	57.1	16:09:57		57.1	57.1
49.5	16:05:00		49.5	49.5	57.3	16:10:00		57.3	57.3
48.7	16:05:03		48.7	48.7	57.3	16:10:03		57.3	57.3
47.5	16:05:06		47.5	47.5	56.6	16:10:06		56.6	56.6
47.8	16:05:09		47.8	47.8	58.6	16:10:09		58.6	58.6
47.9	16:05:12		47.9	47.9	60.1	16:10:12		60.1	60.1
47.9	16:05:15		47.9	47.9	59.7	16:10:15		59.7	59.7
49.9	16:05:18		49.9	49.9	59.2	16:10:18		59.2	59.2
49.9	16:05:21		49.9	49.9	60.4	16:10:21		60.4	60.4
48.1	16:05:24		48.1	48.1	59.3	16:10:24		59.3	59.3
51.6	16:05:27		51.6	51.6	58.4	16:10:27		58.4	58.4
55.3	16:05:30		55.3	55.3	59	16:10:30		59	59
49.9	16:05:33		49.9	49.9	69.9	16:10:33		69.9	69.9
48.9	16:05:36		48.9	48.9	64.6	16:10:36		64.6	64.6
47.7	16:05:39		47.7	47.7	57	16:10:39		57	57
48.4	16:05:42		48.4	48.4	56.4	16:10:42		56.4	56.4
47.5	16:05:45		47.5	47.5	55.7	16:10:45		55.7	55.7
52.9	16:05:48		52.9	52.9	55.6	16:10:48		55.6	55.6
55.5	16:05:51		55.5	55.5	54.6	16:10:51		54.6	54.6
50.3	16:05:54		50.3	50.3	55.5	16:10:54		55.5	55.5
48.8	16:05:57		48.8	48.8	55.8	16:10:57		55.8	55.8
48	16:06:00		48	48.0	57	16:11:00		57	57
48.7	16:06:03		48.7	48.7	69.1	16:11:03		69.1	69.1
47.8	16:06:06		47.8	47.8	68.1	16:11:06		68.1	68.1
46.8	16:06:09		46.8	46.8	60.5	16:11:09		60.5	60.5
46.7	16:06:12		46.7	46.7	57.2	16:11:12		57.2	57.2
46.4	16:06:15		46.4	46.4	58	16:11:15		58	58
47.1	16:06:18		47.1	47.1	59.5	16:11:18		59.5	59.5
47.5	16:06:21		47.5	47.5	70.8	16:11:21		70.8	70.8
46.9	16:06:24		46.9	46.9	71.3	16:11:24		71.3	71.3
47.1	16:06:27		47.1	47.1	60.1	16:11:27		60.1	60.1
47.2	16:06:30		47.2	47.2	56.3	16:11:30		56.3	56.3
46.5	16:06:33		46.5	46.5	54.6	16:11:33		54.6	54.6
47.3	16:06:36		47.3	47.3	55.1	16:11:36		55.1	55.1
47	16:06:39		47	47.0	55.9	16:11:39		55.9	55.9
47	16:06:42		47	47.0	67.8	16:11:42		67.8	67.8
46.4	16:06:45		46.4	46.4	70.9	16:11:45		70.9	70.9
46.1	16:06:48		46.1	46.1	63.4	16:11:48		63.4	63.4
46.5	16:06:51		46.5	46.5	55.7	16:11:51		55.7	55.7
45.6	16:06:54		45.6	45.6	54.1	16:11:54		54.1	54.1
44.8	16:06:57		44.8	44.8	54.4	16:11:57		54.4	54.4
44.3	16:07:00		44.3	44.3	54.4	16:12:00		54.4	54.4

Site A - On South Side of Project Site					Site B - Northwest Corner of Project Site				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
45.1	16:07:03		45.1	45.1	53.6	16:12:03		53.6	53.6
43.9	16:07:06		43.9	43.9	53.4	16:12:06		53.4	53.4
44.7	16:07:09		44.7	44.7	53.5	16:12:09		53.5	53.5
43.8	16:07:12		43.8	43.8	53.6	16:12:12		53.6	53.6
45	16:07:15		45	45.0	53.5	16:12:15		53.5	53.5
45.3	16:07:18		45.3	45.3	51.8	16:12:18		51.8	51.8
47.6	16:07:21		47.6	47.6	53.6	16:12:21		53.6	53.6
53.5	16:07:24		53.5	53.5	53.4	16:12:24		53.4	53.4
55.8	16:07:27		55.8	55.8	54.3	16:12:27		54.3	54.3
54.6	16:07:30		54.6	54.6	55.3	16:12:30		55.3	55.3
52.5	16:07:33		52.5	52.5	61.8	16:12:33		61.8	61.8
50.2	16:07:36		50.2	50.2	72.3	16:12:36		72.3	72.3
50.4	16:07:39		50.4	50.4	62.2	16:12:39		62.2	62.2
52	16:07:42		52	52.0	55.7	16:12:42		55.7	55.7
48.3	16:07:45		48.3	48.3	52.9	16:12:45		52.9	52.9
49.9	16:07:48		49.9	49.9	53.1	16:12:48		53.1	53.1
57.4	16:07:51		57.4	57.4	54.9	16:12:51		54.9	54.9
58.2	16:07:54		58.2	58.2	66.5	16:12:54		66.5	66.5
49.9	16:07:57		49.9	49.9	71.1	16:12:57		71.1	71.1
50.9	16:08:00		50.9	50.9	67.7	16:13:00		67.7	67.7
53.6	16:08:03		53.6	53.6	60.6	16:13:03		60.6	60.6
58.5	16:08:06		58.5	58.5	54.6	16:13:06		54.6	54.6
51.4	16:08:09		51.4	51.4	53.4	16:13:09		53.4	53.4
50.5	16:08:12		50.5	50.5	52	16:13:12		52	52
50.3	16:08:15		50.3	50.3	51.9	16:13:15		51.9	51.9
49.8	16:08:18		49.8	49.8	51.6	16:13:18		51.6	51.6
48.5	16:08:21		48.5	48.5	51.6	16:13:21		51.6	51.6
48.4	16:08:24		48.4	48.4	52.1	16:13:24		52.1	52.1
48.8	16:08:27		48.8	48.8	52.5	16:13:27		52.5	52.5
48.9	16:08:30		48.9	48.9	54.3	16:13:30		54.3	54.3
48.4	16:08:33		48.4	48.4	55.6	16:13:33		55.6	55.6
48.5	16:08:36		48.5	48.5	56.9	16:13:36		56.9	56.9
50.9	16:08:39		50.9	50.9	72.1	16:13:39		72.1	72.1
51.6	16:08:42		51.6	51.6	67.3	16:13:42		67.3	67.3
50.2	16:08:45		50.2	50.2	58.8	16:13:45		58.8	58.8
49.2	16:08:48		49.2	49.2	56	16:13:48		56	56
49.9	16:08:51		49.9	49.9	55.2	16:13:51		55.2	55.2
50.8	16:08:54		50.8	50.8	54.6	16:13:54		54.6	54.6
49.6	16:08:57		49.6	49.6	55.2	16:13:57		55.2	55.2
49.9	16:09:00		49.9	49.9	56.2	16:14:00		56.2	56.2
50.4	16:09:03		50.4	50.4	56.9	16:14:03		56.9	56.9
49.2	16:09:06		49.2	49.2	55.7	16:14:06		55.7	55.7
48.8	16:09:09		48.8	48.8	54.1	16:14:09		54.1	54.1
48.8	16:09:12		48.8	48.8	54.8	16:14:12		54.8	54.8
49.7	16:09:15		49.7	49.7	56	16:14:15		56	56
58.8	16:09:18		58.8	58.8	57.6	16:14:18		57.6	57.6
51.4	16:09:21		51.4	51.4	56.8	16:14:21		56.8	56.8
49.7	16:09:24		49.7	49.7	56.2	16:14:24		56.2	56.2
48.6	16:09:27		48.6	48.6	56.6	16:14:27		56.6	56.6
48.4	16:09:30		48.4	48.4	57.3	16:14:30		57.3	57.3
47.8	16:09:33		47.8	47.8	57.5	16:14:33		57.5	57.5
46.7	16:09:36		46.7	46.7	57.3	16:14:36		57.3	57.3
47.8	16:09:39		47.8	47.8	58.1	16:14:39		58.1	58.1
48.2	16:09:42		48.2	48.2	66	16:14:42		66	66
47.6	16:09:45		47.6	47.6	65.9	16:14:45		65.9	65.9
46.7	16:09:48		46.7	46.7	60.6	16:14:48		60.6	60.6
46.2	16:09:51		46.2	46.2	55.1	16:14:51		55.1	55.1
47.8	16:09:54		47.8	47.8	53.1	16:14:54		53.1	53.1
47.9	16:09:57		47.9	47.9	54	16:14:57		54	54
47.7	16:10:00		47.7	47.7	52.4	16:15:00		52.4	52.4
49.7	16:10:03		49.7	49.7	53.2	16:15:03		53.2	53.2
49.8	16:10:06		49.8	49.8	54	16:15:06		54	54
51.3	16:10:09		51.3	51.3	52.5	16:15:09		52.5	52.5
49.9	16:10:12		49.9	49.9	53.3	16:15:12		53.3	53.3
49.1	16:10:15		49.1	49.1	56.2	16:15:15		56.2	56.2
47.7	16:10:18		47.7	47.7	55.4	16:15:18		55.4	55.4
48.2	16:10:21		48.2	48.2	53	16:15:21		53	53
48.6	16:10:24		48.6	48.6	54.1	16:15:24		54.1	54.1
48.5	16:10:27		48.5	48.5	54.2	16:15:27		54.2	54.2
50	16:10:30		50	50.0	53.3	16:15:30		53.3	53.3
52.1	16:10:33		52.1	52.1	56.2	16:15:33		56.2	56.2
54.4	16:10:36		54.4	54.4	64.6	16:15:36		64.6	64.6
51.8	16:10:39		51.8	51.8	67.4	16:15:39		67.4	67.4
51.6	16:10:42		51.6	51.6	58.4	16:15:42		58.4	58.4
52.5	16:10:45		52.5	52.5	54	16:15:45		54	54
50.8	16:10:48		50.8	50.8	53.3	16:15:48		53.3	53.3
49.3	16:10:51		49.3	49.3	54.6	16:15:51		54.6	54.6
50.4	16:10:54		50.4	50.4	53.3	16:15:54		53.3	53.3
61.5	16:10:57		61.5	61.5	53.6	16:15:57		53.6	53.6
55.6	16:11:00		55.6	55.6	56.5	16:16:00		56.5	56.5
49	16:11:03		49	49.0	58.4	16:16:03		58.4	58.4
48.5	16:11:06		48.5	48.5	56.2	16:16:06		56.2	56.2
49.4	16:11:09		49.4	49.4	58.4	16:16:09		58.4	58.4
49.8	16:11:12		49.8	49.8	68.2	16:16:12		68.2	68.2
49	16:11:15		49	49.0	68.6	16:16:15		68.6	68.6
49.9	16:11:18		49.9	49.9	61.8	16:16:18		61.8	61.8
49.9	16:11:21		49.9	49.9	57.6	16:16:21		57.6	57.6
54.8	16:11:24		54.8	54.8	56.5	16:16:24		56.5	56.5

Site A - On South Side of Project Site					Site B - Northwest Corner of Project Site				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
55.7	16:11:27		55.7	55.7	56	16:16:27		56	56
50.6	16:11:30		50.6	50.6	59.5	16:16:30		59.5	59.5
49.1	16:11:33		49.1	49.1	55.4	16:16:33		55.4	55.4
48.5	16:11:36		48.5	48.5	56.8	16:16:36		56.8	56.8
48	16:11:39		48	48.0	60.6	16:16:39		60.6	60.6
47	16:11:42		47	47.0	59.3	16:16:42		59.3	59.3
46.5	16:11:45		46.5	46.5	56.7	16:16:45		56.7	56.7
48.2	16:11:48		48.2	48.2	57	16:16:48		57	57
48.6	16:11:51		48.6	48.6	58.3	16:16:51		58.3	58.3
47.5	16:11:54		47.5	47.5	56.5	16:16:54		56.5	56.5
49.7	16:11:57		49.7	49.7	55.6	16:16:57		55.6	55.6
48.6	16:12:00		48.6	48.6	56.6	16:17:00		56.6	56.6
49.4	16:12:03		49.4	49.4	55.7	16:17:03		55.7	55.7
50.3	16:12:06		50.3	50.3	61.8	16:17:06		61.8	61.8
52.5	16:12:09		52.5	52.5	71.3	16:17:09		71.3	71.3
54.2	16:12:12		54.2	54.2	63.5	16:17:12		63.5	63.5
49.5	16:12:15		49.5	49.5	56.2	16:17:15		56.2	56.2
48.8	16:12:18		48.8	48.8	56.1	16:17:18		56.1	56.1
45.7	16:12:21		45.7	45.7	62.4	16:17:21		62.4	62.4
45.6	16:12:24		45.6	45.6	76.7	16:17:24		76.7	76.7
44.8	16:12:27		44.8	44.8	68	16:17:27		68	68
45.2	16:12:30		45.2	45.2	68	16:17:30		68	68
46.5	16:12:33		46.5	46.5	62.2	16:17:33		62.2	62.2
51.1	16:12:36		51.1	51.1	56.2	16:17:36		56.2	56.2
58.3	16:12:39		58.3	58.3	55.1	16:17:39		55.1	55.1
50.8	16:12:42		50.8	50.8	53.9	16:17:42		53.9	53.9
47.5	16:12:45		47.5	47.5	56.1	16:17:45		56.1	56.1
46.7	16:12:48		46.7	46.7	56.8	16:17:48		56.8	56.8
47.7	16:12:51		47.7	47.7	55.9	16:17:51		55.9	55.9
47.4	16:12:54		47.4	47.4	55.4	16:17:54		55.4	55.4
45.9	16:12:57		45.9	45.9	55.4	16:17:57		55.4	55.4
45.6	16:13:00		45.6	45.6	55.2	16:18:00		55.2	55.2
48.3	16:13:03		48.3	48.3	54.3	16:18:03		54.3	54.3
46.7	16:13:06		46.7	46.7	57.3	16:18:06		57.3	57.3
46.7	16:13:09		46.7	46.7	65.2	16:18:09		65.2	65.2
46.6	16:13:12		46.6	46.6	66.4	16:18:12		66.4	66.4
47.1	16:13:15		47.1	47.1	59	16:18:15		59	59
48.3	16:13:18		48.3	48.3	56	16:18:18		56	56
48.3	16:13:21		48.3	48.3	56.3	16:18:21		56.3	56.3
51.6	16:13:24		51.6	51.6	56.3	16:18:24		56.3	56.3
60	16:13:27		60	60.0	55.8	16:18:27		55.8	55.8
56	16:13:30		56	56.0	54.7	16:18:30		54.7	54.7
48.2	16:13:33		48.2	48.2	54.4	16:18:33		54.4	54.4
47.3	16:13:36		47.3	47.3	53.3	16:18:36		53.3	53.3
49	16:13:39		49	49.0	53.3	16:18:39		53.3	53.3
60.4	16:13:42		60.4	60.4	54	16:18:42		54	54
51.2	16:13:45		51.2	51.2	53.2	16:18:45		53.2	53.2
48.7	16:13:48		48.7	48.7	53.4	16:18:48		53.4	53.4
48	16:13:51		48	48.0	54.3	16:18:51		54.3	54.3
47.4	16:13:54		47.4	47.4	54.9	16:18:54		54.9	54.9
47.2	16:13:57		47.2	47.2	54.1	16:18:57		54.1	54.1
45.9	16:14:00		45.9	45.9	54	16:19:00		54	54
47.3	16:14:03		47.3	47.3	53.3	16:19:03		53.3	53.3
47.1	16:14:06		47.1	47.1	54.3	16:19:06		54.3	54.3
47.5	16:14:09		47.5	47.5	55.7	16:19:09		55.7	55.7
46.4	16:14:12		46.4	46.4	55.7	16:19:12		55.7	55.7
46.5	16:14:15		46.5	46.5	54.4	16:19:15		54.4	54.4
47.4	16:14:18		47.4	47.4	56	16:19:18		56	56
47	16:14:21		47	47.0	67.7	16:19:21		67.7	67.7
47.6	16:14:24		47.6	47.6	70.4	16:19:24		70.4	70.4
47.6	16:14:27		47.6	47.6	66.9	16:19:27		66.9	66.9
48.9	16:14:30		48.9	48.9	69	16:19:30		69	69
48.4	16:14:33		48.4	48.4	65.5	16:19:33		65.5	65.5
50.5	16:14:36		50.5	50.5	67.8	16:19:36		67.8	67.8
51.2	16:14:39		51.2	51.2	75.3	16:19:39		75.3	75.3
51.9	16:14:42		51.9	51.9	76	16:19:42		76	76
51.2	16:14:45		51.2	51.2	69.5	16:19:45		69.5	69.5
51	16:14:48		51	51.0	59.3	16:19:48		59.3	59.3
50	16:14:51		50	50.0	57.8	16:19:51		57.8	57.8
50.3	16:14:54		50.3	50.3	70.7	16:19:54		70.7	70.7
51.2	16:14:57		51.2	51.2	66	16:19:57		66	66
50.3	16:15:00		50.3	50.3	59.2	16:20:00		59.2	59.2
50.7	16:15:03		50.7	50.7	57.3	16:20:03		57.3	57.3
50.7	16:15:06		50.7	50.7	65.4	16:20:06		65.4	65.4
50.9	16:15:09		50.9	50.9	68	16:20:09		68	68
52.9	16:15:12		52.9	52.9	68.5	16:20:12		68.5	68.5
50	16:15:15		50	50.0	58.2	16:20:15		58.2	58.2
50	16:15:18		50	50.0	55.3	16:20:18		55.3	55.3
48.3	16:15:21		48.3	48.3	54.1	16:20:21		54.1	54.1
47.4	16:15:24		47.4	47.4	54.1	16:20:24		54.1	54.1
47.4	16:15:27		47.4	47.4	55.2	16:20:27		55.2	55.2
46.5	16:15:30		46.5	46.5	56.5	16:20:30		56.5	56.5
46.9	16:15:33		46.9	46.9	68.8	16:20:33		68.8	68.8
48.8	16:15:36		48.8	48.8	70.5	16:20:36		70.5	70.5
55	16:15:39		55	55.0	73	16:20:39		73	73
49.2	16:15:42		49.2	49.2	65.9	16:20:42		65.9	65.9
48.5	16:15:45		48.5	48.5	57	16:20:45		57	57
46.8	16:15:48		46.8	46.8	53.8	16:20:48		53.8	53.8
46.4	16:15:51		46.4	46.4	55.8	16:20:51		55.8	55.8
47.1	16:15:54		47.1	47.1	69.3	16:20:54		69.3	69.3
46.8	16:15:57		46.8	46.8	64.1	16:20:57		64.1	64.1
47.6	16:16:00		47.6	47.6	55.8	16:21:00		55.8	55.8
46.9	16:16:03		46.9	46.9	56.4	16:21:03		56.4	56.4
46.8	16:16:06		46.8	46.8	58.2	16:21:06		58.2	58.2
47	16:16:09		47	47.0	56.8	16:21:09		56.8	56.8

Site A - On South Side of Project Site					Site B - Northwest Corner of Project Site				
SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL	SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
49.1	16:16:12		49.1	49.1	58.8	16:21:12		58.8	58.8
50.8	16:16:15		50.8	50.8	59	16:21:15		59	59
50.4	16:16:18		50.4	50.4	58.9	16:21:18		58.9	58.9
48.9	16:16:21		48.9	48.9	57.6	16:21:21		57.6	57.6
50	16:16:24		50	50.0	57.4	16:21:24		57.4	57.4
52.5	16:16:27		52.5	52.5	56.9	16:21:27		56.9	56.9
51.8	16:16:30		51.8	51.8	57.4	16:21:30		57.4	57.4
52.3	16:16:33		52.3	52.3	55.5	16:21:33		55.5	55.5
53.2	16:16:36		53.2	53.2	55.2	16:21:36		55.2	55.2
55.7	16:16:39		55.7	55.7	55.1	16:21:39		55.1	55.1
51.5	16:16:42		51.5	51.5	56.6	16:21:42		56.6	56.6
50.2	16:16:45		50.2	50.2	65.4	16:21:45		65.4	65.4
49.8	16:16:48		49.8	49.8	69.3	16:21:48		69.3	69.3
50	16:16:51		50	50.0	72.2	16:21:51		72.2	72.2
51.3	16:16:54		51.3	51.3	71.9	16:21:54		71.9	71.9
49	16:16:57		49	49.0	65	16:21:57		65	65
58.9	16:17:00		58.9	58.9	62.5	16:22:00		62.5	62.5
61.1	16:17:03		61.1	61.1	59.7	16:22:03		59.7	59.7
51.1	16:17:06		51.1	51.1	57.2	16:22:06		57.2	57.2
49.9	16:17:09		49.9	49.9	55.9	16:22:09		55.9	55.9
50.1	16:17:12		50.1	50.1	55.6	16:22:12		55.6	55.6
50.1	16:17:15		50.1	50.1	56.2	16:22:15		56.2	56.2
50.3	16:17:18		50.3	50.3	55.2	16:22:18		55.2	55.2
52.5	16:17:21		52.5	52.5	54.6	16:22:21		54.6	54.6
50.8	16:17:24		50.8	50.8	54.7	16:22:24		54.7	54.7
50.4	16:17:27		50.4	50.4	56	16:22:27		56	56
50.6	16:17:30		50.6	50.6	55.1	16:22:30		55.1	55.1
50.2	16:17:33		50.2	50.2	55.6	16:22:33		55.6	55.6
49.8	16:17:36		49.8	49.8	57.8	16:22:36		57.8	57.8
51.1	16:17:39		51.1	51.1	59	16:22:39		59	59
54	16:17:42		54	54.0	58.6	16:22:42		58.6	58.6
55.9	16:17:45		55.9	55.9	58.6	16:22:45		58.6	58.6
56	16:17:48		56	56.0	57.9	16:22:48		57.9	57.9
51.9	16:17:51		51.9	51.9	56.9	16:22:51		56.9	56.9
50.9	16:17:54		50.9	50.9	56.2	16:22:54		56.2	56.2
50.1	16:17:57		50.1	50.1	55.3	16:22:57		55.3	55.3
58.8	16:18:00		58.8	58.8	56.1	16:23:00		56.1	56.1
61.5	16:18:03		61.5	61.5	55.7	16:23:03		55.7	55.7
53.2	16:18:06		53.2	53.2	55.2	16:23:06		55.2	55.2
51.3	16:18:09		51.3	51.3	56.8	16:23:09		56.8	56.8
56.1	16:18:12		56.1	56.1	55.4	16:23:12		55.4	55.4
51.9	16:18:15		51.9	51.9	55.3	16:23:15		55.3	55.3
49.3	16:18:18		49.3	49.3	54	16:23:18		54	54
51.2	16:18:21		51.2	51.2	54.2	16:23:21		54.2	54.2
47.9	16:18:24		47.9	47.9	56.3	16:23:24		56.3	56.3
47.7	16:18:27		47.7	47.7	58.7	16:23:27		58.7	58.7
50.4	16:18:30		50.4	50.4	72.8	16:23:30		72.8	72.8
49.5	16:18:33		49.5	49.5	73.4	16:23:33		73.4	73.4
47.8	16:18:36		47.8	47.8	66.8	16:23:36		66.8	66.8
49.7	16:18:39		49.7	49.7	58.8	16:23:39		58.8	58.8
49.6	16:18:42		49.6	49.6	54.5	16:23:42		54.5	54.5
50.7	16:18:45		50.7	50.7	53.5	16:23:45		53.5	53.5
51.5	16:18:48		51.5	51.5	53.7	16:23:48		53.7	53.7
52.5	16:18:51		52.5	52.5	53.5	16:23:51		53.5	53.5
51	16:18:54		51	51.0	54.2	16:23:54		54.2	54.2
52	16:18:57		52	52.0	54.4	16:23:57		54.4	54.4
51	16:19:00		51	51.0	53.5	16:24:00		53.5	53.5
50.4	16:19:03		50.4	50.4	54.6	16:24:03		54.6	54.6
49.5	16:19:06		49.5	49.5	52.9	16:24:06		52.9	52.9
50.6	16:19:09		50.6	50.6	53.6	16:24:09		53.6	53.6
50.4	16:19:12		50.4	50.4	54.1	16:24:12		54.1	54.1
51.4	16:19:15		51.4	51.4	55.7	16:24:15		55.7	55.7
50.4	16:19:18		50.4	50.4	62.9	16:24:18		62.9	62.9
50.2	16:19:21		50.2	50.2	73.4	16:24:21		73.4	73.4
52	16:19:24		52	52.0	68.8	16:24:24		68.8	68.8
50.7	16:19:27		50.7	50.7	61	16:24:27		61	61
50.4	16:19:30		50.4	50.4	57.2	16:24:30		57.2	57.2
49.7	16:19:33		49.7	49.7	55.3	16:24:33		55.3	55.3
51.2	16:19:36		51.2	51.2	53.4	16:24:36		53.4	53.4
52	16:19:39		52	52.0	53	16:24:39		53	53
60.8	16:19:42		60.8	60.8	53.7	16:24:42		53.7	53.7
59.5	16:19:45		59.5	59.5	54.7	16:24:45		54.7	54.7
57.1	16:19:48		57.1	57.1	53.3	16:24:48		53.3	53.3
54.7	16:19:51		54.7	54.7	53	16:24:51		53	53
51.9	16:19:54		51.9	51.9	53.1	16:24:54		53.1	53.1
52.2	16:19:57		52.2	52.2	52.7	16:24:57		52.7	52.7
60.4	16:20:00	54.6	60.4	60.4	53	16:25:00	63.9	53	53
64.1	16:20:03	54.6	64.1	64.1	54.6	16:25:03	63.9	54.6	54.6
53.5	16:20:06	54.6	53.5	53.5	56.6	16:25:06	63.9	56.6	56.6
48.3	16:20:09	54.6	48.3	48.3	55.9	16:25:09	63.9	55.9	55.9
48.8	16:20:12	54.5	48.8	48.8	55.1	16:25:12	63.9	55.1	55.1
50.4	16:20:15	54.5	50.4	50.4	55.7	16:25:15	63.9	55.7	55.7
49.6	16:20:18	54.5	49.6	49.6	58.4	16:25:18	63.9	58.4	58.4
49.3	16:20:21	54.5	49.3	49.3	59.1	16:25:21	63.9	59.1	59.1
51	16:20:24	54.5	51	51.0	59.3	16:25:24	63.9	59.3	59.3
58.4	16:20:27	54.5	58.4	58.4	59.6	16:25:27	63.9	59.6	59.6
57.8	16:20:30	54.5	57.8	57.8	57.7	16:25:30	63.9	57.7	57.7
52.3	16:20:33	54.5	52.3	52.3	56.4	16:25:33	63.9	56.4	56.4
54.5	16:20:36	54.4	54.5	54.5	56.1	16:25:36	63.9	56.1	56.1
57.8	16:20:39	54.4	57.8	57.8	59.1	16:25:39	63.9	59.1	59.1
54.4	16:20:42	54.4	54.4	54.4	74.1	16:25:42	63.9	74.1	74.1
56.7	16:20:45	54.4	56.7	56.7	67.4	16:25:45	64.0	67.4	67.4
51.2	16:20:48	54.4	51.2	51.2	58.8	16:25:48	64.0	58.8	58.8
51.1	16:20:51	54.4	51.1	51.1	56.8	16:25:51	64.0	56.8	56.8
56.5	16:20:54	54.4	56.5	56.5	55.2	16:25:54	64.0	55.2	55.2
51.6	16:20:57	54.3	51.6	51.6	55.3	16:25:57	64.0	55.3	55.3
50.7	16:21:00	54.3	50.7	50.7	54.6	16:26:00	64.0	54.6	54.6
50	16:21:03	54.3	50	50.0	53.9	16:26:03	64.0	53.9	53.9
48.7	16:21:06	54.2	48.7	48.7	54.3	16:26:06	64.0	54.3	54.3
49	16:21:09	54.2	49	49.0	55.3	16:26:09	63.9	55.3	55.3
48	16:21:12	54.2	48	48.0	57.5	16:26:12	63.9	57.5	57.5
47.3	16:21:15	54.2	47.3	47.3	66.1	16:26:15	63.9	66.1	66.1
46.8	16:21:18	54.2	46.8	46.8	71.6	16:26:18	63.9	71.6	71.6
46.7	16:21:21	54.2	46.7	46.7	65.4	16:26:21	63.9	65.4	65.4
46.8	16:21:24	54.2	46.8	46.8	65.1	16:26:24	63.9	65.1	65.1

APPENDIX C

RCNM Model Construction Noise Calculation Printouts

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/25/2021
Case Description: Tentative Tract Map No. 38237 Discovery - Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home to South	Residential	53.5	53.5	53.5

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	520	5
Tractor	No	40	84		520	5

Equipment		Calculated (dBA) *Lmax	Leq	Results Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq
Dozer		56.3	52.3	N/A	N/A	N/A	N/A
Tractor		58.7	54.7	N/A	N/A	N/A	N/A
	Total	**59**	**57**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Church to North	Commercial	60.9	60.9	60.9

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	520	0
Tractor	No	40	84		520	0

Equipment		Calculated (dBA) *Lmax	Leq	Results Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq
Dozer		61.3	57.3	N/A	N/A	N/A	N/A
Tractor		63.7	59.7	N/A	N/A	N/A	N/A
	Total	**64**	**62**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/25/2021
Case Description: Tentative Tract Map No. 38237 Discovery - Grading

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Home to South	Residential	53.5	53.5	53.5

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		520	5
Tractor	No	40	84		520	5

		Calculated (dBA)		Results Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		59.7	55.7	N/A	N/A	N/A	N/A
Tractor		58.7	54.7	N/A	N/A	N/A	N/A
	Total	**60**	**58**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Church to North	Commercial	60.9	60.9	60.9

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		520	0
Tractor	No	40	84		520	0

		Calculated (dBA)		Results Noise Limits (dBA)			
				Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		64.7	60.7	N/A	N/A	N/A	N/A
Tractor		63.7	59.7	N/A	N/A	N/A	N/A
	Total	**65**	**63**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/25/2021
Case Description: Tentative Tract Map No. 38237 Discovery - Building Construction

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Home to South	Residential	53.5	53.5	53.5

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Gradall	No	40		83.4	520	5
Tractor	No	40	84		520	5

	Calculated (dBA)		Results Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Gradall	58.1	54.1	N/A	N/A	N/A	N/A
Tractor	58.7	54.7	N/A	N/A	N/A	N/A
Total	**59**	**57**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Church to North	Commercial	60.9	60.9	60.9

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Gradall	No	40		83.4	520	0
Tractor	No	40	84		520	0

	Calculated (dBA)		Results Noise Limits (dBA)			
			Day		Evening	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq
Gradall	64.7	60.7	N/A	N/A	N/A	N/A
Tractor	63.7	59.7	N/A	N/A	N/A	N/A
Total	**65**	**63**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/25/2021
Case Description: Tentative Tract Map No. 38237 Discovery - Paving

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Home to South	Residential	53.5	53.5	53.5

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	520	5
Roller	No	20		80	520	5

		Calculated (dBA)		Results Noise Limits (dBA) Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		51.9	48.9	N/A	N/A	N/A	N/A
Roller		54.7	47.7	N/A	N/A	N/A	N/A
	Total	**55**	**51**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Church to North	Commercial	60.9	60.9	60.9

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	520	0
Roller	No	20		80	520	0

		Calculated (dBA)		Results Noise Limits (dBA) Day		Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver		56.9	53.9	N/A	N/A	N/A	N/A
Roller		59.7	52.7	N/A	N/A	N/A	N/A
	Total	**60**	**56**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/25/2021
Case Description: Tentative Tract Map No. 38237 Discovery - Painting

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Home to South	Residential	53.5	53.5	53.5

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	520	5

		Results Calculated (dBA)		Day	Noise Limits (dBA)	Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		52.3	48.3	N/A	N/A	N/A	N/A
	Total	**52**	**48**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Church to North	Commercial	60.9	60.9	60.9

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	520	0

		Results Calculated (dBA)		Day	Noise Limits (dBA)	Evening	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		57.3	53.3	N/A	N/A	N/A	N/A
	Total	**57**	**53**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

APPENDIX D

FHWA Model Offsite Traffic Noise Calculation Printouts

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS

Project: TTM No. 38237 Discovery
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (Oliver Street)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	76.44%	3.92%	17.64%	98.00%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.78%	0.04%	0.18%	1.00%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.78%	0.04%	0.18%	1.00%

Road Name: Oliver Street **Segment: South of Alessandro Boulevard**

Average Daily Traffic: 3957 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-5.44	-0.98	-1.20	59.74	57.78	50.90	52.66	60.03	60.17	70 dBA:	**13**	**13**
Medium Trucks	76.31	-25.35	-0.98	-1.20	48.78	26.91	20.03	21.79	29.16	29.30	65 dBA:	**28**	**29**
Heavy Trucks	81.16	-25.35	-0.98	-1.20	53.62	31.75	24.87	26.63	34.00	34.15	60 dBA:	**60**	**62**
				Total:	**60.96**	**57.79**	**50.91**	**52.67**	**60.04**	**60.18**	55 dBA:	**130**	**133**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT CONDITIONS

Project: TTM No. 38237 Discovery
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (Oliver Street)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	76.44%	3.92%	17.64%	98.00%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.78%	0.04%	0.18%	1.00%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.78%	0.04%	0.18%	1.00%

Road Name: Oliver Street **Segment: South of Alessandro Boulevard**

Average Daily Traffic: 4589 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-4.80	-0.98	-1.20	60.38	58.42	51.54	53.30	60.67	60.81	70 dBA:	**14**	**15**
Medium Trucks	76.31	-24.71	-0.98	-1.20	49.42	27.55	20.67	22.43	29.80	29.94	65 dBA:	**31**	**32**
Heavy Trucks	81.16	-24.71	-0.98	-1.20	54.27	32.40	25.52	27.28	34.65	34.79	60 dBA:	**67**	**68**
				Total:	**61.60**	**58.44**	**51.56**	**53.32**	**60.69**	**60.83**	55 dBA:	**144**	**147**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: YEAR 2040 WITHOUT PROJECT CONDITIONS

Project: TTM No. 38237 Discovery
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (Oliver Street)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	76.44%	3.92%	17.64%	98.00%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.78%	0.04%	0.18%	1.00%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.78%	0.04%	0.18%	1.00%

Road Name: Oliver Street **Segment: South of Alessandro Boulevard**

Average Daily Traffic: 4409 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-4.97	-0.98	-1.20	60.21	58.25	51.37	53.13	60.50	60.64	70 dBA:	**14**	**14**
Medium Trucks	76.31	-24.88	-0.98	-1.20	49.25	27.38	20.50	22.26	29.63	29.77	65 dBA:	**30**	**31**
Heavy Trucks	81.16	-24.88	-0.98	-1.20	54.09	32.22	25.34	27.10	34.47	34.61	60 dBA:	**65**	**66**
				Total:	**61.43**	**58.26**	**51.38**	**53.14**	**60.51**	**60.65**	55 dBA:	**140**	**143**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: YEAR 2040 WITH PROJECT CONDITIONS

Project: TTM No. 38237 Discovery
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Arterial)				Vehicle Mix 3 (Oliver Street)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	76.44%	3.92%	17.64%	98.00%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	0.78%	0.04%	0.18%	1.00%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	0.78%	0.04%	0.18%	1.00%

Road Name: Oliver Street **Segment: South of Alessandro Boulevard**

Average Daily Traffic: 5041 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 3 Roadway Classification: Minor Arterial

	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.24 ft)										**Centerline Distance to**		
	Noise Adjustments				**Unmitigated Noise Levels**						**Noise Contour (in feet)**		
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	67.36	-4.39	-0.98	-1.20	60.79	58.83	51.95	53.71	61.08	61.22	70 dBA:	**15**	**16**
Medium Trucks	76.31	-24.30	-0.98	-1.20	49.83	27.96	21.08	22.84	30.21	30.35	65 dBA:	**33**	**34**
Heavy Trucks	81.16	-24.30	-0.98	-1.20	54.67	32.80	25.92	27.69	35.06	35.20	60 dBA:	**71**	**73**
				Total:	**62.01**	**58.84**	**51.96**	**53.72**	**61.09**	**61.24**	55 dBA:	**153**	**156**

APPENDIX E

FHWA Model Onsite Traffic Noise Calculation Printouts

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Oliver Street
Lot Number: 1

Project Name: TTM No. 38237
Job Number: 21132

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	5,041 vehicles
Peak Hour Volume:	504 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	76.4%	3.9%	17.6%	98.0%
Medium Trucks:	0.8%	0.0%	0.2%	1.0%
Heavy Trucks:	0.8%	0.0%	0.2%	1.0%

Site Data

Barrier Height:	**6 feet**
Barrier Type(Wall/Berm):	Wall
Site Conditions(Hard/Soft):	Soft
Centerline (C.L.) Dist. to Barrier:	50 feet
C.L. Dist. To Observer (Backyard):	60 feet
Barrier Dist. To Observer (Backyard):	10 feet
C.L. Dist. To Observer (Structure):	53 feet
Barrier Dist. To Observer (Structure):	3 feet
Road Grade:	0.00 %
Left View:	-90 degrees
Right View:	90 degrees

Elevations

Barrier Base Elevation:	1,559.3 feet
Road Elevation:	1,560.0 feet
Noise Source Elevation above Road	
Autos:	0 feet
Med Trucks:	2.3 feet
Hvy Trucks:	8 feet
Pad Elevation:	1,559.3 feet
Observer Heights Above Pad Elevation	
Exterior:	5 feet
First Floor:	5.5 feet
Second Floor:	14 feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	67.36	-4.39	-1.00	-1.20	0.00	-7.7	-6.8	0
Med Trucks:	76.31	-24.30	-1.00	-1.20	0.00	-7.22	-6.64	0
Hvy Trucks:	81.16	-24.30	-1.00	-1.20	0.00	-5.2	-5.4	0

UNMITIGATED NOISE LEVELS (Backyard with topographical attenuation)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.8	58.8	51.9	53.7	61.1	61.2
Med Trucks:	49.8	27.9	21.1	22.8	30.2	30.3
Hvy Trucks:	54.7	32.8	25.9	27.7	35.0	35.2
Traffic Noise:	**62.0**	**58.8**	**51.9**	**53.7**	**61.1**	**61.2**

MITIGATED NOISE LEVELS (Backyard with sound wall)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.1	51.1	44.2	46.0	53.4	53.5
Med Trucks:	42.6	20.7	13.8	15.6	23.0	23.1
Hvy Trucks:	49.5	27.6	20.7	22.5	29.8	30.0
Traffic Noise:	**54.9**	**51.1**	**44.3**	**46.0**	**53.4**	**53.5**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	54.9	52.9	46.0	47.8	55.2	55.3
Med Trucks:	44.1	22.2	15.3	17.1	24.4	24.6
Hvy Trucks:	50.1	28.3	21.4	23.2	30.5	30.7
Traffic Noise:	**56.4**	**52.9**	**46.0**	**47.8**	**55.2**	**55.3**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	61.4	59.5	52.6	54.4	61.7	61.9
Med Trucks:	50.5	28.6	21.7	23.5	30.9	31.0
Hvy Trucks:	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Traffic Noise:	**#N/A**	**#N/A**	**#N/A**	**#N/A**	**#N/A**	**#N/A**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Oliver Street
Lot Number: 4

Project Name: TTM No. 38237
Job Number: 21132

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	5,041 vehicles
Peak Hour Volume:	504 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	76.4%	3.9%	17.6%	98.0%
Medium Trucks:	0.8%	0.0%	0.2%	1.0%
Heavy Trucks:	0.8%	0.0%	0.2%	1.0%

Site Data

Barrier Height:	**6 feet**
Barrier Type(Wall/Berm):	Wall
Site Conditions(Hard/Soft):	Soft
Centerline (C.L.) Dist. to Barrier:	50 feet
C.L. Dist. To Observer (Backyard):	60 feet
Barrier Dist. To Observer (Backyard):	10 feet
C.L. Dist. To Observer (Structure):	69 feet
Barrier Dist. To Observer (Structure):	19 feet
Road Grade:	0.00 %
Left View:	-90 degrees
Right View:	90 degrees

Elevations

Barrier Base Elevation:	1,558.2 feet
Road Elevation:	1,558.5 feet
Noise Source Elevation above Road	
Autos:	0 feet
Med Trucks:	2.3 feet
Hvy Trucks:	8 feet
Pad Elevation:	1,558.2 feet
Observer Heights Above Pad Elevation	
Exterior:	5 feet
First Floor:	5.5 feet
Second Floor:	14 feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	67.36	-4.39	-1.01	-1.20	0.00	-7.85	-7.22	-0.164
Med Trucks:	76.31	-24.30	-1.01	-1.20	0.00	-7.43	-6.4	0
Hvy Trucks:	81.16	-24.30	-1.01	-1.20	0.00	-5.3	-4.9	0

UNMITIGATED NOISE LEVELS (Backyard with topographical attenuation)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.7	58.7	51.8	53.6	61.0	61.1
Med Trucks:	49.8	27.9	21.1	22.8	30.2	30.3
Hvy Trucks:	54.7	32.8	25.9	27.7	35.0	35.2
Traffic Noise:	**61.9**	**58.7**	**51.8**	**53.6**	**61.0**	**61.1**

MITIGATED NOISE LEVELS (Backyard with sound wall)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.9	51.0	44.1	45.8	53.2	53.3
Med Trucks:	42.4	20.5	13.6	15.4	22.8	22.9
Hvy Trucks:	49.4	27.5	20.6	22.4	29.7	29.9
Traffic Noise:	**54.8**	**51.0**	**44.1**	**45.9**	**53.2**	**53.4**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.6	50.6	43.7	45.5	52.9	53.0
Med Trucks:	42.4	20.5	13.7	15.4	22.8	22.9
Hvy Trucks:	48.8	26.9	20.0	21.8	29.1	29.3
Traffic Noise:	**54.4**	**50.6**	**43.7**	**45.5**	**52.9**	**53.0**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.5	57.5	50.7	52.4	59.8	59.9
Med Trucks:	48.7	26.8	19.9	21.7	29.1	29.2
Hvy Trucks:	53.5	31.7	24.8	26.6	33.9	34.1
Traffic Noise:	**60.8**	**57.5**	**50.7**	**52.4**	**59.8**	**59.9**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Oliver Street
Lot Number: 8

Project Name: TTM No. 38237
Job Number: 21132

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	5,041 vehicles
Peak Hour Volume:	504 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	76.4%	3.9%	17.6%	98.0%
Medium Trucks:	0.8%	0.0%	0.2%	1.0%
Heavy Trucks:	0.8%	0.0%	0.2%	1.0%

Site Data

Barrier Height:	**6 feet**
Barrier Type(Wall/Berm):	Wall
Site Conditions(Hard/Soft):	Soft
Centerline (C.L.) Dist. to Barrier:	50 feet
C.L. Dist. To Observer (Backyard):	60 feet
Barrier Dist. To Observer (Backyard):	10 feet
C.L. Dist. To Observer (Structure):	60 feet
Barrier Dist. To Observer (Structure):	10 feet
Road Grade:	0.00 %
Left View:	-90 degrees
Right View:	90 degrees

Elevations

Barrier Base Elevation:	1,556.8 feet
Road Elevation:	1,556.5 feet
Noise Source Elevation above Road	
Autos:	0 feet
Med Trucks:	2.3 feet
Hvy Trucks:	8 feet
Pad Elevation:	1,556.8 feet
Observer Heights Above Pad Elevation	
Exterior:	5 feet
First Floor:	5.5 feet
Second Floor:	14 feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	67.36	-4.39	-1.01	-1.20	0.00	-8.05	-7.15	0
Med Trucks:	76.31	-24.30	-1.01	-1.20	0.00	-7.65	-6.56	0
Hvy Trucks:	81.16	-24.30	-1.01	-1.20	0.00	-5.4	-4.9	0

UNMITIGATED NOISE LEVELS (Backyard with topographical attenuation)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.6	58.7	51.8	53.6	60.9	61.1
Med Trucks:	49.8	27.9	21.0	22.8	30.2	30.3
Hvy Trucks:	54.6	32.8	25.9	27.7	35.0	35.2
Traffic Noise:	**61.9**	**58.7**	**51.8**	**53.6**	**61.0**	**61.1**

MITIGATED NOISE LEVELS (Backyard with sound wall)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.7	50.8	43.9	45.6	53.0	53.1
Med Trucks:	42.2	20.3	13.4	15.2	22.5	22.7
Hvy Trucks:	49.2	27.4	20.5	22.3	29.6	29.8
Traffic Noise:	**54.6**	**50.8**	**43.9**	**45.7**	**53.0**	**53.2**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	53.6	51.6	44.8	46.5	53.9	54.0
Med Trucks:	43.2	21.4	14.5	16.2	23.6	23.8
Hvy Trucks:	49.7	27.9	21.0	22.8	30.1	30.3
Traffic Noise:	**55.4**	**51.7**	**44.8**	**46.5**	**53.9**	**54.1**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.6	58.6	51.7	53.5	60.9	61.0
Med Trucks:	49.6	27.7	20.9	22.6	30.0	30.1
Hvy Trucks:	54.5	32.6	25.7	27.5	34.8	35.0
Traffic Noise:	**61.8**	**58.6**	**51.8**	**53.5**	**60.9**	**61.0**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Road Name: Oliver Street
Lot Number: 9

Project Name: TTM No. 38237
Job Number: 21132

NOISE MODEL INPUTS

Highway Data

Average Daily Traffic:	5,041 vehicles
Peak Hour Volume:	504 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	36 feet

Vehicle Mix

	Day	Evening	Night	Daily
Autos:	76.4%	3.9%	17.6%	98.0%
Medium Trucks:	0.8%	0.0%	0.2%	1.0%
Heavy Trucks:	0.8%	0.0%	0.2%	1.0%

Site Data

Barrier Height:	**6 feet**
Barrier Type(Wall/Berm):	Wall
Site Conditions(Hard/Soft):	Soft
Centerline (C.L.) Dist. to Barrier:	50 feet
C.L. Dist. To Observer (Backyard):	60 feet
Barrier Dist. To Observer (Backyard):	10 feet
C.L. Dist. To Observer (Structure):	65 feet
Barrier Dist. To Observer (Structure):	15 feet
Road Grade:	0.00 %
Left View:	-90 degrees
Right View:	90 degrees

Elevations

Barrier Base Elevation:	1,557.3 feet
Road Elevation:	1,555.0 feet
Noise Source Elevation above Road	
Autos:	0 feet
Med Trucks:	2.3 feet
Hvy Trucks:	8 feet
Pad Elevation:	1,557.3 feet
Observer Heights Above Pad Elevation	
Exterior:	5 feet
First Floor:	5.5 feet
Second Floor:	14 feet

FHWA NOISE MODEL CALCULATIONS

	REMEL	Traffic Flow	Distance	Finite Road	Grade	Barrier Attenuation Exterior	1st Flr	2nd Flr
Autos:	67.36	-4.39	-1.04	-1.20	0.00	-8.85	-8.2	-0.145
Med Trucks:	76.31	-24.30	-1.04	-1.20	0.00	-8.45	-7.65	0
Hvy Trucks:	81.16	-24.30	-1.04	-1.20	0.00	-6.08	-5.2	0

UNMITIGATED NOISE LEVELS (Backyard with topographical attenuation)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	60.6	58.6	51.8	53.5	60.9	61.0
Med Trucks:	49.8	27.9	21.0	22.8	30.2	30.3
Hvy Trucks:	54.6	32.8	25.9	27.6	35.0	35.1
Traffic Noise:	**61.8**	**58.6**	**51.8**	**53.5**	**60.9**	**61.0**

MITIGATED NOISE LEVELS (Backyard with sound wall)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	51.9	49.9	43.0	44.8	52.2	52.3
Med Trucks:	41.3	19.5	12.6	14.3	21.7	21.8
Hvy Trucks:	48.5	26.7	19.8	21.6	28.9	29.1
Traffic Noise:	**53.8**	**50.0**	**43.1**	**44.8**	**52.2**	**52.3**

MITIGATED NOISE LEVELS (First Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	52.0	50.0	43.1	44.9	52.3	52.4
Med Trucks:	41.6	19.7	12.8	14.6	21.9	22.1
Hvy Trucks:	48.9	27.0	20.1	21.9	29.2	29.4
Traffic Noise:	**54.0**	**50.0**	**43.2**	**44.9**	**52.3**	**52.4**

MITIGATED NOISE LEVELS (Second Floor)

	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	59.8	57.9	51.0	52.8	60.1	60.3
Med Trucks:	49.0	27.2	20.3	22.0	29.4	29.6
Hvy Trucks:	53.9	32.0	25.1	26.9	34.3	34.4
Traffic Noise:	**61.1**	**57.9**	**51.0**	**52.8**	**60.2**	**60.3**