# APPENDIX F

## NOISE TECHNICAL REPORT

# SOLANO COUNTY AGROMIN CHIP AND GRIND FACILITY PROJECT

## NOISE TECHNICAL REPORT

**Prepared by:**

**RCH Group**

**December 2021**

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# EXECUTIVE SUMMARY

This report analyzes the existing noise levels and potential noise impacts from the Agromin Chip and Grind Facility Project (the "Project") at 8757 Pedrick Road, Dixon, Solano County, California. The Project consists of developing a Green Waste Chip and Grind Facility.

RCH Group conducted two long-term (72-hour) and several short-term (10-minute) noise measurements at the project site. The main source of existing noise in the Project vicinity was noise from the nearby commercial uses. Additional noise sources during the measurements included heavy winds and rain, and distant traffic on Pedrick Road.

The Solano County Municipal Code does not contain hours of construction and there are no construction noise standards in the Solano County General Plan. Therefore, Project construction noise would result in a less-than-significant impact.

The grinder would be the loudest piece of equipment during operations. Depending on the location of the grinder (when operating) noise from use of the grinder could reach up to 65 dB, Lmax at the nearest off-site commercial building façade to the east. Noise reductions afforded by building construction can vary depending on construction materials and techniques. Standard construction practices typically provide approximately 25-30 dB exterior-to-interior noise level reduction (Caltrans, 2002a). Therefore, noise levels from the grinder would not exceed the 45 dB, Leq or the 65 dB, Lmax threshold for interior uses in commercial buildings.

The grinder would be located approximately 120 feet north of the property line and approximately 2,340 feet north from the nearest sensitive receptor. At this distance, the use of a grinder during operations would have a maximum noise level of 50 dB and would not exceed the County's exterior noise limit of 55 dB, Leq and 70 dB, Lmax for daytime hours. Therefore, noise from operations would be a less-than-significant impact.

The Project would result in no impacts related to vibration or aircraft noise.

## INTRODUCTION

This report provides an overview of existing noise levels measured at the Project site, local noise regulatory framework, and an analysis of potential noise impacts that would result from the Project. This report is prepared in a format to answer the noise issues identified in Appendix G of the CEQA Guidelines (as revised in 2019).

## CHECKLIST

| | Would the project result in: | Significant or Potentially Significant Impact | Less Than Significant Impact with Mitigation Incorporated | Less than Significant | No Impact |
|---|---|---|---|---|---|
| a) | 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? | ☐ | ☐ | ☒ | ☐ |
| b) | Generation of excessive groundborne vibration or groundborne noise levels? | ☐ | ☐ | ☐ | ☒ |
| c) | 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? | ☐ | ☐ | ☐ | ☒ |

## SETTING

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound pressure level has become the most common descriptor used to characterize the "loudness" of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Decibels are measured using different scales, and it has been found that A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. All references to decibels (dB) in this report will be A-weighted unless noted otherwise.

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A–weighted sound level over a given time period (Leq)[1]; average day–night 24-hour average sound level (Ldn)[2] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL)[3], also a 24-hour average that includes both an evening and a nighttime sensitivity weighting. **Table 1** identifies decibel levels for common sounds heard in the environment. With regard to increases in A-weighted noise level, the following relationships occur (Caltrans, 1998a):

- Under controlled conditions in an acoustics laboratory, the trained healthy human ear is able to discern changes in sound levels of 1 dB;
- Outside of such controlled conditions, the trained ear can detect changes of 2 dB in normal environmental noise;
- It is widely accepted that the average healthy ear, however, can barely perceive noise levels changes of 3 dB;
- A change in level of 5 dB is a readily perceptible increase in noise level; and
- A 10-dB change is recognized as twice as loud as the original source.

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1 The Equivalent Sound Level (Leq) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.

2 Ldn is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to night between 10:00 p.m. and 7:00 a.m.

3 CNEL is the average A-weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 p.m., and an addition of a 10–decibel penalty in the night between 10:00 p.m. and 7:00 a.m.

**TABLE 1. TYPICAL NOISE LEVELS**

| Noise Level (dB) | Outdoor Activity | Indoor Activity |
|---|---|---|
| 90+ | Gas lawn mower at 3 feet, jet flyover at 1,000 feet | Rock Band |
| 80-90 | Diesel truck at 50 feet | Loud television at 3 feet |
| 70-80 | Gas lawn mower at 100 feet, noisy urban area | Garbage disposal at 3 feet, vacuum cleaner at 10 feet |
| 60-70 | Commercial area | |
| 40-60 | Quiet urban daytime, traffic at 300 feet | Large business office, dishwasher next room |
| 20-40 | Quiet rural, suburban nighttime | Concert hall (background), library, bedroom at night |
| 10-20 | | Broadcast / recording studio |
| 0 | Lowest threshold of human hearing | Lowest threshold of human hearing |

SOURCE: (modified from Caltrans Technical Noise Supplement, 1998)

### *Noise Attenuation*

Stationary point sources of noise, including construction equipment, attenuate (lessen) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. Soft sites attenuate at 7.5 dB per doubling because they have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. Hard sites have reflective surfaces (e.g., parking lots or smooth bodies of water) and therefore have less attenuation (6.0 dB per doubling). A street or roadway with moving vehicles (known as a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dB each time the distance doubles from the source, that also depends on ground absorption (Caltrans, 1998b). Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, would increase the attenuation that occurs by distance alone. Noise from large construction sites would have characteristics of both "point" and "line" sources, so attenuation would probably range between 4.5 and 7.5 dB per doubling of distance.

## Regulatory Context

### *Federal*

There are no federal noise standards that regulate noise issues related to the Project.

### *Local*

#### Solano County General Plan

The Noise Element of the Public Health and Safety Chapter of the Solano County General Plan include noise reduction and abatement techniques that protect noise-sensitive land uses. The following policies are relevant to the Project (Solano County, 2015):

> Stationary Noise Source Control: Activities at industrial, commercial, recreational, and public service facilities can also generate noise levels that adversely affect adjacent sensitive land uses. From a land use planning perspective, stationary noise source control strategies focus on

two goals: (1) preventing the introduction of new stationary noise sources near noise-sensitive areas and (2) preventing encroachment of noise-sensitive uses on existing stationary noise sources. The first goal can be achieved by applying noise performance standards to proposed stationary noise sources. The second goal can be met by requiring that new noise-sensitive uses near existing stationary noise sources include project features that ensure compliance with noise performance standards.

HS.I-66: Locate industrial and other noise-generating land uses away from noise-sensitive land uses and/or require substantial noise sources to be completely enclosed withing buildings or structures.

**Table 2** presents the noise standards from the Solano County General Plan's Noise Element that apply to non-transportation noise sources.

**TABLE 2. NONTRANSPORTATION NOISE STANDARDS – AVERAGE (DB, LEQ)/ MAXIMUM (DBA LMAX)[1]**

| Receiving Land Use | Outdoor Area | | Interior[2] | Notes |
|---|---|---|---|---|
| | Daytime | Nighttime | Day and Night | |
| All Residential | 55/70 | 50/65 | 35/55 | |
| Transient Lodging | 55/75 | - | 35/55 | 3 |
| Hospitals and Nursing Homes | 55/75 | - | 35/55 | 4,5 |
| Theaters and Auditoriums | - | - | 30/50 | 5 |
| Churches, Meeting Halls, Schools, Libraries, etc. | 55/75 | - | 35/60 | 5 |
| Office Buildings | 60/75 | - | 45/65 | 5 |
| Commercial Buildings | 55/75 | - | 45/65 | 5 |
| Playgrounds, Parks, etc. | 65/75 | - | - | 5 |
| Industry | 60/80 | - | 50/70 | 5 |

NOTES:

Leq = equivalent or energy-averaged sound level; Lmax = highest root-mean-square sound level measured over a given period of time.

1. The standards shall be reduced by 5 dBA for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards, then the noise level standards shall be increased at 5-dBA increments to encompass the ambient.

2. Interior-noise-level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.

3. Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.

4. Hospitals are often noise-generating uses. The exterior-noise-levels standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxations by either hospital staff or patients.

5. The outdoor activity area of theses uses (if any), are not typically utilized during nighttime hours.

SOURCE: Solano County General Plan, 2015.

### Solano County Code

The Solano County General Plan's Noise Element indicates that the County should develop, adopt and implement a County noise ordinance (HS.I-60). Currently, the County does not have an adopted noise ordinance.

### *Sensitive Receptors*

The Solano County General Plan's Noise Element identifies noise-sensitive land uses as schools, hospitals, rest homes, long-term care facilities, mental care facilities, and residences. The Noise Element also indicates that industrial and commercial land uses may cause noise but are essential for economic growth.

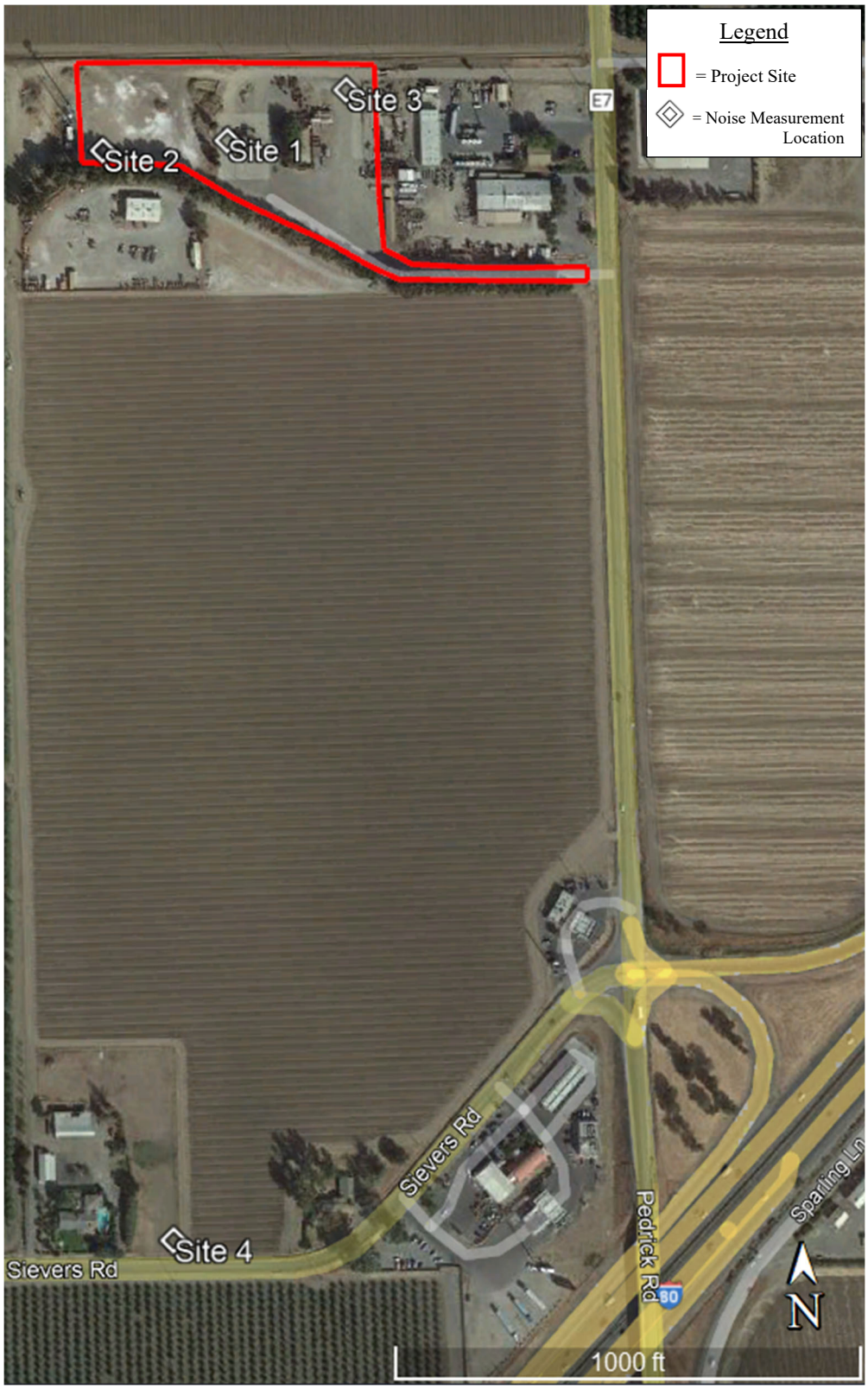
The Project is surrounded by agricultural uses to the south, west and north. There are two commercial uses directly east of the Project. There are two distant residences on agricultural land to the south, the nearest residence is approximately 2,220 feet south of the Project.

## Methodology and Existing Noise Environment

To quantify existing ambient noise levels, this noise study included 2 long-term (72-hour) and several short-term (10-minute) noise measurements at the Project site. Metrosonics db308 Sound Level Meters calibrated before and after the measurements were used for the long-term noise measurements. A Larson Davis SoundTrack LxT Sound Level Meter calibrated before and after the measurements was used for the short-term measurements. **Table 3** summarizes the locations and results of the noise measurements. **Figure 1** shows the noise measurement locations on a map.

The **Noise Appendix** includes 24-hour noise plots for Sites 1 and 2 and hourly measurements results. Based on observations from the short-term measurements, the main source of existing noise in the Project vicinity was noise from the nearby commercial uses. Additional noise sources during the measurements included heavy winds and rain, and distant traffic on Pedrick Road.

## Figure-1: Noise Measurement Locations

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Source: RCH Group and Google Earth, 2021.

**TABLE 3. EXISTING NOISE LEVELS**

| Location | Time Period | Noise Levels (dB) | Noise Sources |
|---|---|---|---|
| Site 1: Approximate center of Project on existing concrete pad. | December 16, 12:00 a.m. Through December 18, 11:59 p.m., 2021 Thursday – Saturday<br>72-hour measurement | Hourly Leq's ranged from 44-64<br>CNELs: 67, 60, 56 | Unattended noise measurements do not identify noise sources |
| Site 1: Approximate center of Project on existing concrete pad. | Monday December 20, 2021<br>11:03 a.m. to 11:13 a.m. | 5-minute Leq's:<br>54, 47 | Heavy wind and rain 60 dB, distant noise from commercial warehouse to the south 46 dB. |
| Site 2: Southwest area of Project. | December 16, 12:00 a.m. Through December 18, 11:59 p.m., 2021 Thursday – Saturday<br>72-hour measurement | Hourly Leq's ranged from 52-82<br>CNELs: 84, 61, 59 | Unattended noise measurements do not specifically identify noise sources |
| Site 2: Southwest area of Project. | Monday December 20, 2021<br>11:14 a.m. to 11:24 a.m. | 5-minute Leq's:<br>45, 42 | Noise from commercial warehouse directly south 52 dB. |
| Site 3: Northwest area of Project. | Monday December 20, 2021<br>11:26 a.m. to 11:36 a.m. | 5-minute Leq's:<br>49, 42 | Distant traffic noise on Pedrick Road 49 dB. |
| Site 4: Nearest residence to the south of Project on Siever Road, 25 feet north of centerline of Siever Road. | Monday December 20, 2021<br>11:43 a.m. to 11:53 a.m. | 5-minute Leq's:<br>71, 66 | Busy road, traffic noise on Sievers Road 65-75 dB. |

SOURCE: RCH GROUP, 2021

# DISCUSSION

**a) Would the project 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?**

## *Construction Related Noise Impacts*

Construction would result in a temporary increase in ambient noise levels in the vicinity of the Project. The construction noise levels of primary concern are often associated with the site preparation phase (USEPA, 1973). There are no proposed grading activities for construction of the Project. The noise levels generated by construction equipment would vary greatly depending upon factors such as the type and specific model of the equipment, the operation being performed, the condition of the equipment and the prevailing wind direction.

The maximum noise levels for various types of construction equipment that could be used during Project construction are provided in **Table 4** below. Maximum noise levels generated by construction equipment used for the Project would range from 74 to 89 dB, Lmax at a distance of 50-feet.

**TABLE 4 TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT (LMAX)**

| Construction Equipment | Noise Level (dB, Lmax at 50 feet) |
|---|---|
| Dump Truck | 76 |
| Air Compressor | 78 |
| Backhoe | 78 |
| Dozer | 82 |
| Compactor (ground) | 83 |
| Crane | 81 |
| Excavator | 81 |
| Flat Bed Truck | 74 |
| Paver | 77 |
| Compressor (Air) | 78 |
| Generator | 81 |
| Roller | 80 |
| Vibratory Concrete Mixer | 80 |
| Concrete Mixer Truck | 79 |
| Jackhammer | 89 |
| Front End Loader | 79 |

NOTES:
$L_{max}$ = maximum sound level
An attenuation rate of 7.5 per doubling distance was used to convert the FHWA noise levels at 50-feet to the noise levels at 600-feet.

SOURCE: Federal Highway Administration (FHWA) Roadway Construction Noise Model User's Guide, 2006.

At approximately 2,220 feet north of the nearest sensitive receptor, noise from construction activities would attenuate up to approximately 48 dB, Lmax. These noise levels would be much more quiet than existing traffic on Sievers Road (**See Table 3**). The Solano County Municipal Code does not contain hours of construction and there are no construction noise standards in the Solano County General Plan. Therefore, the Project would result in a less-than-significant impact.

### *Operational Noise Impacts*

#### Project impacts on adjacent commercial land uses

As discussed above, the Project is surrounded by agricultural uses to the south, west and north. There are two commercial uses directly east of the Project. According to the General Plan, these nearby land uses are not considered to be noise-sensitive receptors. The grinder would be the loudest piece of equipment during operations and would operate approximately 4 hours a day. The grinder would be portable and placed on a tracked skid that allows the grinder to move as necessary. A grinder would produce a reference noise level of approximately 77 dB, Lmax at 200 feet. Depending on the location of the grinder (when operating) noise from use of the grinder could reach up to 65 dB, Lmax at the nearest off-site commercial building façade to the east. Noise reductions afforded by building construction can vary depending on construction materials and techniques. Standard construction practices typically provide approximately 25-30 dB exterior-to-interior noise level reduction (Caltrans, 2002a). Therefore, noise levels from the grinder would not exceed the 45 dB, Leq or the 65 dB, Lmax threshold for interior uses in commercial buildings.

#### Project impacts on residential land uses

The nearest noise-sensitive receptor is a residence that is on an agricultural property that approximately 2,220 feet south of the Project. For residential land uses, the General Plan's Noise Element limits daytime noise to 55 dB, Leq and 70 dB, Lmax (daytime) and 50 dB, Leq and 65 dB, Lmax (nighttime) (See **Table 2**). The Project would only operate during daytime hours. Thus, this analysis will consider noise a significant impact if the nearest nearby residence would be exposed to an exterior noise level of greater than 55 dB, Leq and 70 dB, Lmax during operations (even though this residence is technically an agricultural land use).

Daytime noise levels generated by the grinder are shown in **Table 5.**

**TABLE 5 DAYTIME NOISE LEVELS ASSOCIATED WITH PROJECT OPERATIONS AT THE NEAREST RECEPTOR**

| Construction Equipment | Reference Noise Level at 200 feet | Distance to the Nearest Receptor | Maximum Noise Level of Equipment at Nearest Receptor (dB) | Does equipment violate County daytime Standards (dB)? | Attenuation needed to meet standard? |
|---|---|---|---|---|---|
| Grinder | 77 dBA at 200 feet[a] | 2,340 feet[b] | 50 dB | No | None |

NOTES:
a: This reference noise level derives from multiple measurements from separate projects with similar conditions and equipment. The highest noise levels produced were used as reference levels providing the most conservative level available.
b: Noise attenuation modeling assumes a 7.5 dB attenuation per doubling of distance for "soft site" conditions.

As shown in **Table 5**, use of a grinder during operations would have a maximum noise level of 50 dB and would not exceed the County's exterior noise limit of 55 dB, Leq and 70 dB, Lmax for daytime hours. Therefore, noise from operations would be a **less-than-significant impact.**

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**b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?**

Construction activities have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. In most cases, vibration induced by typical construction equipment does not result in adverse effects on people or structures (Caltrans, 2013). Vibrational effects from typical construction activities are only a concern within 25 feet of existing structures (Caltrans, 2002b). There are no structures within 25 feet of the Project site. Therefore, the Project would have **no impact.**

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**c) 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?**

The Project site is not within the vicinity of a private airstrip or an airport land use plan, or within 2 miles of a public use airport. The Project site is approximately 2.5 miles southeast of the UCD Airport, which is operated as a general aviation airport and is open to the public. The UCD Airport does not have an airport land use plan. The Yolo County Airport, approximately 6 miles north of the Project site. Therefore, the Project would have **no impact** from airport noise**.**

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# REFERENCES

California Department of Transportation (Caltrans). 1998a. *Technical Noise Supplement*.

California Department of Transportation (Caltrans). 2013. *Technical Noise Supplement*.

California Department of Transportation (Caltrans). 1998b. *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects.*

California Department of Transportation (Caltrans). 2002a. *California Airport Land Use Planning Handbook.*

California Department of Transportation (Caltrans). 2002b. *Transportation Related Earthborne Vibrations*.

Federal Highway Administration (FHWA). 2006. *Roadway Construction Noise Model User's Guide.*

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# Noise Appendix

Long Term Noise Measurement Graphs for Site 1 and Site 2

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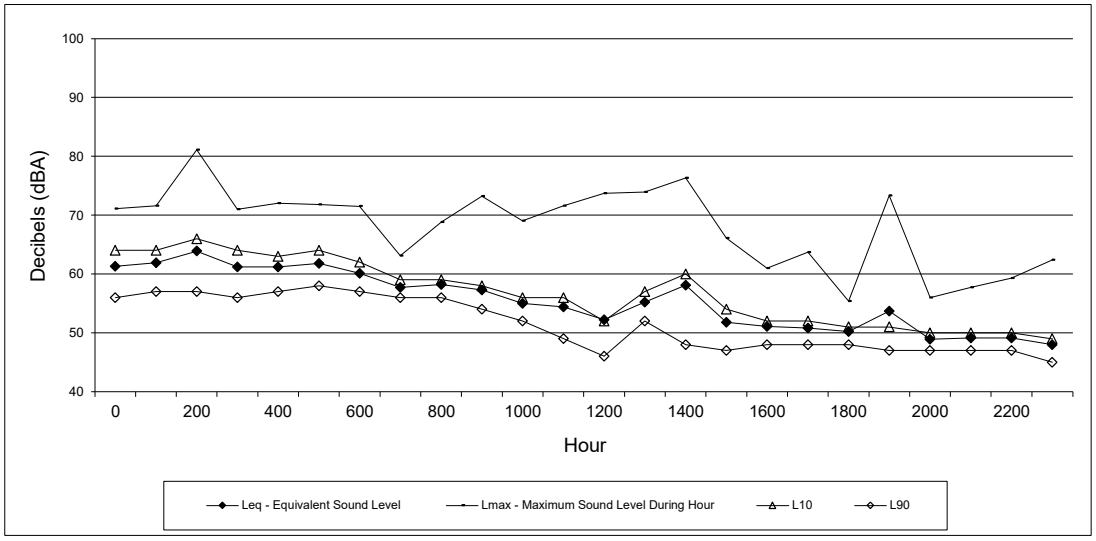
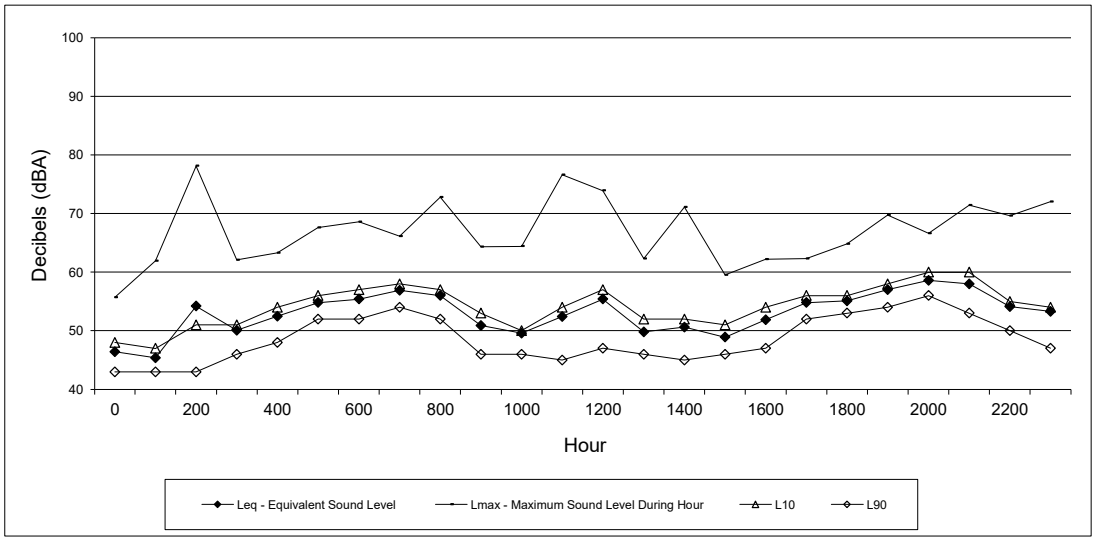



Site 1: Approximate center of Project on existing concrete pad
Thursday December 16, 2021

| Hour | Leq - Equivalent Sound Level | Lmax - Maximum Sound Level During Hour | L10 | L90 |
|---|---|---|---|---|
| 0 | 61 | 71 | 64 | 56 |
| 100 | 62 | 72 | 64 | 57 |
| 200 | 64 | 81 | 66 | 57 |
| 300 | 61 | 71 | 64 | 56 |
| 400 | 61 | 72 | 63 | 57 |
| 500 | 62 | 72 | 64 | 58 |
| 600 | 60 | 72 | 62 | 57 |
| 700 | 58 | 63 | 59 | 56 |
| 800 | 58 | 69 | 59 | 56 |
| 900 | 57 | 73 | 58 | 54 |
| 1000 | 55 | 69 | 56 | 52 |
| 1100 | 54 | 72 | 56 | 49 |
| 1200 | 52 | 74 | 52 | 46 |
| 1300 | 55 | 74 | 57 | 52 |
| 1400 | 58 | 76 | 60 | 48 |
| 1500 | 52 | 66 | 54 | 47 |
| 1600 | 51 | 61 | 52 | 48 |
| 1700 | 51 | 64 | 52 | 48 |
| 1800 | 50 | 55 | 51 | 48 |
| 1900 | 54 | 73 | 51 | 47 |
| 2000 | 49 | 56 | 50 | 47 |
| 2100 | 49 | 58 | 50 | 47 |
| 2200 | 49 | 59 | 50 | 47 |
| 2300 | 48 | 62 | 49 | 45 |

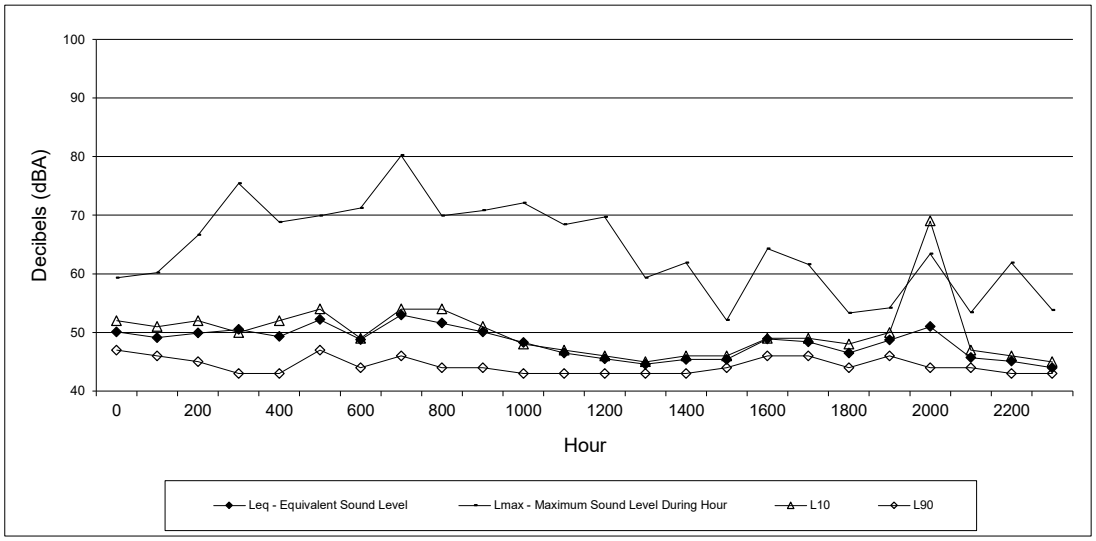
**CNEL 67**




Site 1: Approximate center of Project on existing concrete pad
Friday December 17, 2021

| Hour | Leq - Equivalent Sound Level | Lmax - Maximum Sound Level During Hour | L10 | L90 |
|---|---|---|---|---|
| 0 | 46 | 56 | 48 | 43 |
| 100 | 45 | 62 | 47 | 43 |
| 200 | 54 | 78 | 51 | 43 |
| 300 | 50 | 62 | 51 | 46 |
| 400 | 53 | 63 | 54 | 48 |
| 500 | 55 | 68 | 56 | 52 |
| 600 | 55 | 69 | 57 | 52 |
| 700 | 57 | 66 | 58 | 54 |
| 800 | 56 | 73 | 57 | 52 |
| 900 | 51 | 64 | 53 | 46 |
| 1000 | 50 | 64 | 50 | 46 |
| 1100 | 52 | 77 | 54 | 45 |
| 1200 | 55 | 74 | 57 | 47 |
| 1300 | 50 | 62 | 52 | 46 |
| 1400 | 51 | 71 | 52 | 45 |
| 1500 | 49 | 60 | 51 | 46 |
| 1600 | 52 | 62 | 54 | 47 |
| 1700 | 55 | 62 | 56 | 52 |
| 1800 | 55 | 65 | 56 | 53 |
| 1900 | 57 | 70 | 58 | 54 |
| 2000 | 59 | 67 | 60 | 56 |
| 2100 | 58 | 71 | 60 | 53 |
| 2200 | 54 | 70 | 55 | 50 |
| 2300 | 53 | 72 | 54 | 47 |

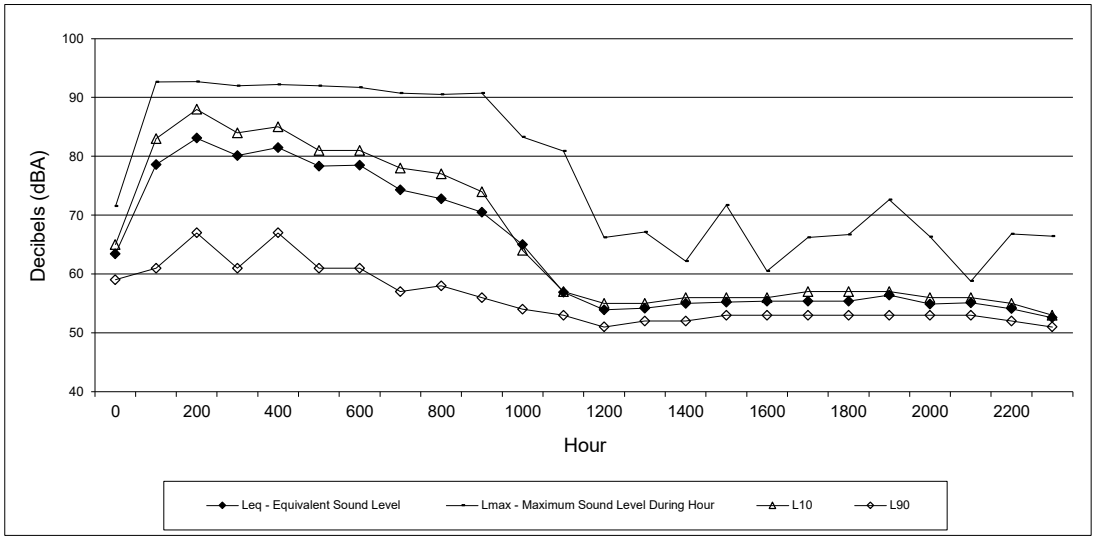
**CNEL: 60**




Site 1: Approximate center of Project on existing concrete pad
Saturday December 19, 2021

| Hour | Leq - Equivalent Sound Level | Lmax - Maximum Sound Level During Hour | L10 | L90 |
|---|---|---|---|---|
| 0 | 50 | 59 | 52 | 47 |
| 100 | 49 | 60 | 51 | 46 |
| 200 | 50 | 67 | 52 | 45 |
| 300 | 51 | 75 | 50 | 43 |
| 400 | 49 | 69 | 52 | 43 |
| 500 | 52 | 70 | 54 | 47 |
| 600 | 49 | 71 | 49 | 44 |
| 700 | 53 | 80 | 54 | 46 |
| 800 | 52 | 70 | 54 | 44 |
| 900 | 50 | 71 | 51 | 44 |
| 1000 | 48 | 72 | 48 | 43 |
| 1100 | 47 | 68 | 47 | 43 |
| 1200 | 46 | 70 | 46 | 43 |
| 1300 | 45 | 59 | 45 | 43 |
| 1400 | 45 | 62 | 46 | 43 |
| 1500 | 45 | 52 | 46 | 44 |
| 1600 | 49 | 64 | 49 | 46 |
| 1700 | 48 | 62 | 49 | 46 |
| 1800 | 47 | 53 | 48 | 44 |
| 1900 | 49 | 54 | 50 | 46 |
| 2000 | 51 | 63 | 69 | 44 |
| 2100 | 46 | 53 | 47 | 44 |
| 2200 | 45 | 62 | 46 | 43 |
| 2300 | 44 | 54 | 45 | 43 |

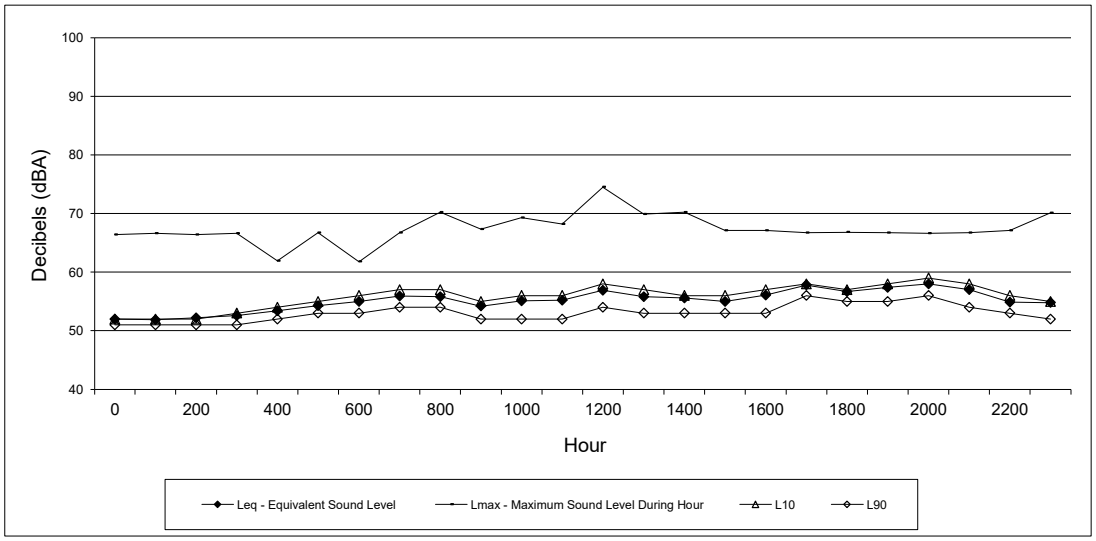
**CNEL: 56**




Site 2: Southwest area of Project
Thursday December 16, 2021

| Hour | Leq - Equivalent Sound Level | Lmax - Maximum Sound Level During Hour | L10 | L90 |
|---|---|---|---|---|
| 0 | 63 | 72 | 65 | 59 |
| 100 | 79 | 93 | 83 | 61 |
| 200 | 83 | 93 | 88 | 67 |
| 300 | 80 | 92 | 84 | 61 |
| 400 | 82 | 92 | 85 | 67 |
| 500 | 78 | 92 | 81 | 61 |
| 600 | 79 | 92 | 81 | 61 |
| 700 | 74 | 91 | 78 | 57 |
| 800 | 73 | 91 | 77 | 58 |
| 900 | 71 | 91 | 74 | 56 |
| 1000 | 65 | 83 | 64 | 54 |
| 1100 | 57 | 81 | 57 | 53 |
| 1200 | 54 | 66 | 55 | 51 |
| 1300 | 54 | 67 | 55 | 52 |
| 1400 | 55 | 62 | 56 | 52 |
| 1500 | 55 | 72 | 56 | 53 |
| 1600 | 55 | 61 | 56 | 53 |
| 1700 | 55 | 66 | 57 | 53 |
| 1800 | 55 | 67 | 57 | 53 |
| 1900 | 56 | 73 | 57 | 53 |
| 2000 | 55 | 66 | 56 | 53 |
| 2100 | 55 | 59 | 56 | 53 |
| 2200 | 54 | 67 | 55 | 52 |
| 2300 | 53 | 66 | 53 | 51 |

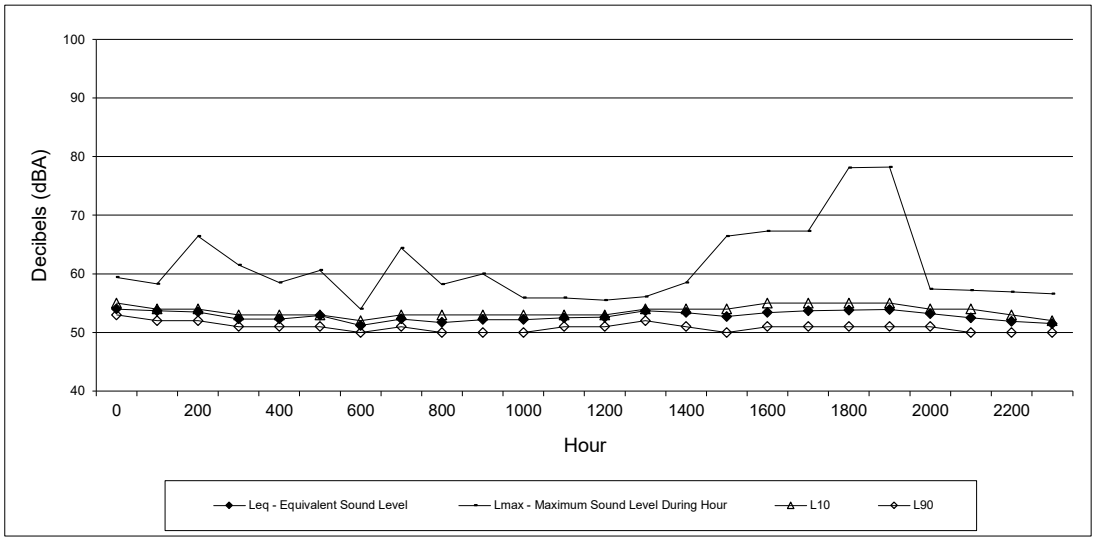
**CNEL 84**




Site 2: Southwest area of Project
Friday December 17, 2021

| Hour | Leq - Equivalent Sound Level | Lmax - Maximum Sound Level During Hour | L10 | L90 |
|---|---|---|---|---|
| 0 | 52 | 66 | 52 | 51 |
| 100 | 52 | 67 | 52 | 51 |
| 200 | 52 | 66 | 52 | 51 |
| 300 | 53 | 67 | 53 | 51 |
| 400 | 53 | 62 | 54 | 52 |
| 500 | 54 | 67 | 55 | 53 |
| 600 | 55 | 62 | 56 | 53 |
| 700 | 56 | 67 | 57 | 54 |
| 800 | 56 | 70 | 57 | 54 |
| 900 | 54 | 67 | 55 | 52 |
| 1000 | 55 | 69 | 56 | 52 |
| 1100 | 55 | 68 | 56 | 52 |
| 1200 | 57 | 75 | 58 | 54 |
| 1300 | 56 | 70 | 57 | 53 |
| 1400 | 56 | 70 | 56 | 53 |
| 1500 | 55 | 67 | 56 | 53 |
| 1600 | 56 | 67 | 57 | 53 |
| 1700 | 58 | 67 | 58 | 56 |
| 1800 | 57 | 67 | 57 | 55 |
| 1900 | 57 | 67 | 58 | 55 |
| 2000 | 58 | 67 | 59 | 56 |
| 2100 | 57 | 67 | 58 | 54 |
| 2200 | 55 | 67 | 56 | 53 |
| 2300 | 55 | 70 | 55 | 52 |

**CNEL: 61**




Site 2: Southwest area of Project
Saturday December 19, 2021

| Hour | Leq - Equivalent Sound Level | Lmax - Maximum Sound Level During Hour | L10 | L90 |
|---|---|---|---|---|
| 0 | 54 | 59 | 55 | 53 |
| 100 | 54 | 58 | 54 | 52 |
| 200 | 54 | 66 | 54 | 52 |
| 300 | 52 | 62 | 53 | 51 |
| 400 | 52 | 59 | 53 | 51 |
| 500 | 53 | 61 | 53 | 51 |
| 600 | 51 | 54 | 52 | 50 |
| 700 | 52 | 64 | 53 | 51 |
| 800 | 52 | 58 | 53 | 50 |
| 900 | 52 | 60 | 53 | 50 |
| 1000 | 52 | 56 | 53 | 50 |
| 1100 | 53 | 56 | 53 | 51 |
| 1200 | 53 | 56 | 53 | 51 |
| 1300 | 54 | 56 | 54 | 52 |
| 1400 | 53 | 59 | 54 | 51 |
| 1500 | 53 | 66 | 54 | 50 |
| 1600 | 53 | 67 | 55 | 51 |
| 1700 | 54 | 67 | 55 | 51 |
| 1800 | 54 | 78 | 55 | 51 |
| 1900 | 54 | 78 | 55 | 51 |
| 2000 | 53 | 57 | 54 | 51 |
| 2100 | 53 | 57 | 54 | 50 |
| 2200 | 52 | 57 | 53 | 50 |
| 2300 | 52 | 57 | 52 | 50 |

**CNEL: 59**