Noise Impact Assessment for the California Renewable Carbon Williams Production Facility Project

Colusa County, California

Prepared For:

California Renewable Carbon, LLC

Prepared By:

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
2525 Warren Drive
Rocklin, California 95677

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LIST OF ACRONYMS AND ABBREVIATIONS

County	County of Colusa
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	Decibel is A-weighted
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HDR	High Density Residential
Hz	Hertz
I-5	Interstate 5
L_{dn}	Day/Night noise level
L_{eq}	Equivalent noise level
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PPV	Peak particle velocity
RMS	Root mean square
sf	Square Foot
WEAL	Western Electro-Acoustic Laboratory, Inc.

1.0 INTRODUCTION

This report documents the results of a Noise Impact Assessment completed for the California Renewable Carbon (CRC) Williams Production Facility Project (Project), which includes the construction and operation of a biocarbon production facility in unincorporated Colusa County. The Project site is located on approximately 49 acres in unincorporated Colusa County. This assessment was prepared as a comparison of predicted Project noise levels to noise standards promulgated by the County of Colusa General Plan Noise Element and County Code. The purpose of this report is to estimate Project-generated noise levels, as a result of Project operations, and determine the level of impact the Project would have on the environment.

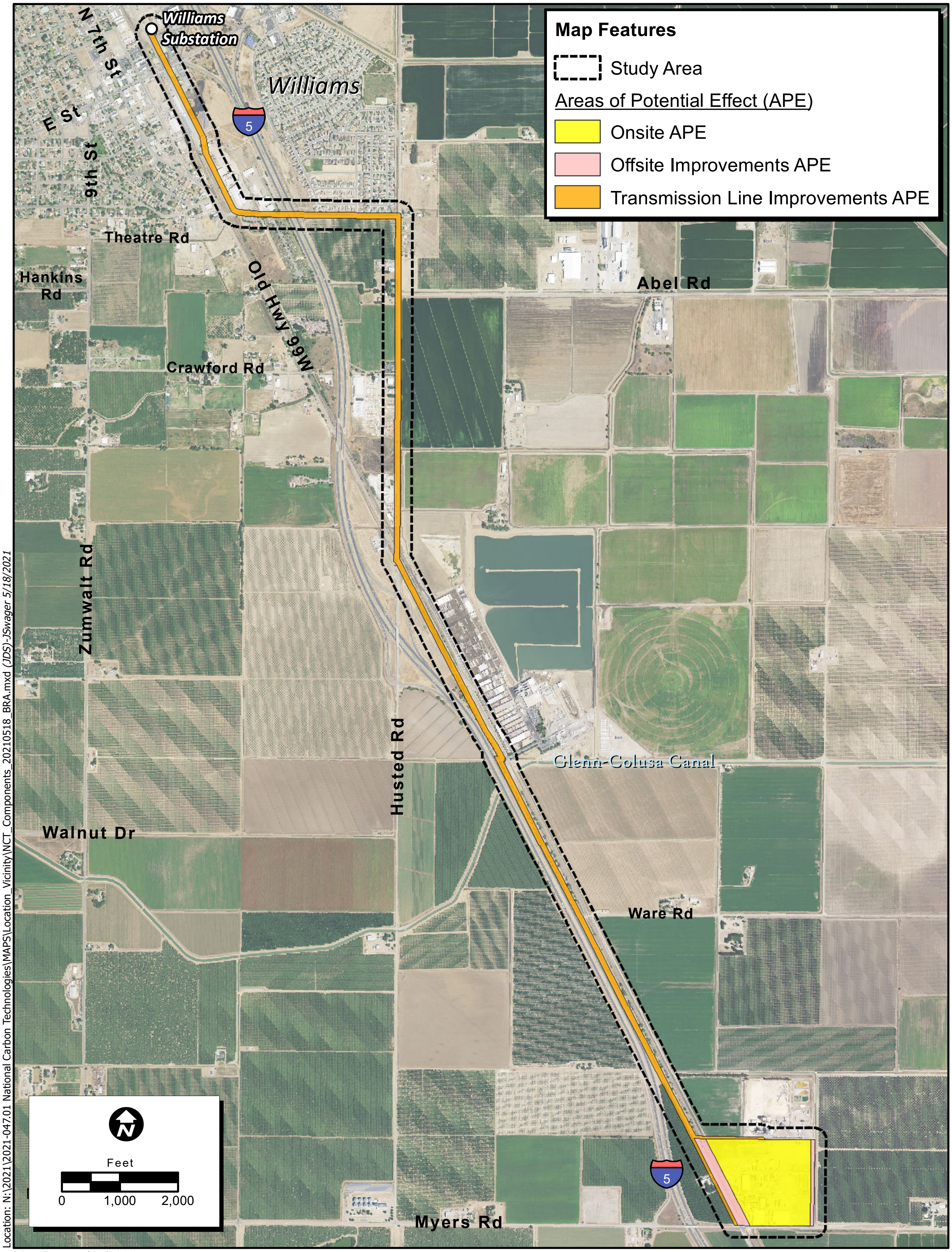
CRC is a leader in environmental technology with more than 185 issued and pending patents around processes and products engineered to improve the environment. CRC proposes to repurpose an existing facility in Colusa County to construct a new renewable biocarbon production facility. The new facility will use CRC's patented non combustion technology to convert sustainably sourced biomass into renewable biocarbon products. The new facility will use self-generated renewable biogas for process energy as well as generate and export renewable electricity to the grid. The new biocarbon process will be net water positive and carbon negative on a lifecycle basis. The facility also will significantly reduce regional air emissions by thousands of tons per year by converting locally sourced biomass such as orchard rotations and trimmings, that otherwise undergo open burning or land disposal, into renewable biocarbon products. CRC's products will be used to displace fossil-based products and reduce environmental impacts from metals production, energy generation, and crop production, and to purify the air and water. CRC will create more than 65 direct clean-tech jobs working toward environmental improvement.

1.1 Project Location and Description

The Project Site is located at 6229 Myers Road in unincorporated Colusa County, approximately 1.4 miles south of the Williams (see Figure 1-1). The approximately 49-acre site at the northeast corner of the intersection of Myers Road and Frontage Road would be the location of the CRC Williams facility. The site currently accommodates the existing Olam Tomato Processing facility, comprising approximately 161,000 square feet of existing structures including existing buildings, an existing rail spur, and two existing water wells. The site is bound by the Wadham Energy Company facility just north of the Project Site with agricultural lands north of the Wadham facility, and agricultural land and residences to the east and south. The Union Pacific Railroad (UPRR) tracks and Frontage Road run west of the site, with Interstate-5 (I-5) positioned further west. Orchard land with a single-family residence on a parcel zoned for Heavy Industrial (M-2) is located between Frontage Road and I-5 approximately 150 feet from the western boundary of the site. The site is located approximately 1,000 feet (0.3 mile) from I-5.

The purpose of the Project is to use renewable biomass, primarily in the form of orchard rotations and trimmings, to produce a biocarbon product using a net water positive, non-combustion process involving thermal conversion of biomass. The process would use self-generated biogas for process energy and would produce net electric power for export sale to Pacific Gas and Electric (PG&E) through interconnection to either a PG&E 12 kilovolt (kV) distribution line or PG&E's Wadham 60 kV power line to PG&E's Williams Generating Station. The Project would also include improvements to, and extension of,

Appendix "J"



Map Date: 5/18/2021

Sources: ESRI, California Energy Commission, RFE, NAIP (2020)

Figure 1-1. Project Location and Vicinity

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an existing rail spur system on the property which interconnects with the Union Pacific Railroad tracks adjacent to the property.

The process at the CRC Williams facility would involve the following components discussed in more detail:

- Biomass receiving and sizing;
- Biomass drying;
- Non-combustion thermal conversion;
- Pelletizing;
- Pellet finishing and shipping; and
- Cogeneration.

CRC would utilize all existing buildings onsite and would construct several smaller support structures for the process. A new paved access road into the northeast corner of the facility would be constructed as well as a new drainage basin and other drainage improvements. New process equipment, tanks, pipe bridges, and conveyor belts would be installed outdoors in the central portion of the site in and around existing buildings.

The Project would involve improvements to, and extension of, an existing rail spur system on the property that interconnects to the UPRR tracks that run adjacent to the Project Site and along I-5. Improvements to the existing rail spur may involve improvements to the rail spur track (i.e., new ballast, ties, rail), signal improvements, and/or improvements to utility lines along the rail spur (electrical lines, fiber optic lines, etc.). Improvements to the UPRR tracks may be requested by UPRR, including potentially new ballast, ties, rail, and/or signal or utility line improvements on or near the UPRR tracks. Extension of the rail spur is also proposed along the eastern boundary of the CRC Williams facility property. New track, signal facilities, and utility lines will be installed in this area in support of the rail spur. Finally, a new rail spur loadout area would be constructed adjacent to the new rail spur.

Biogas from the process would be used in a new cogeneration system for generation of electricity. The process would provide net electric power for export sale to PG&E through interconnection to either PG&E's Williams 1101 12 kV distribution line or PG&E's Wadham 60 kV power line to PG&E's Williams Generating Station. Both existing lines are located on the same power poles along Frontage Road running north to the PG&E Williams Generating Station in Williams. It is assumed that PG&E will require reconductoring along this route and may require replacement of some or all of the power poles along this route. For interconnection to the 12 kV distribution line, a new transformer or circuit breaker may be required at the PG&E Williams Generating Station (within the station facility). Alternatively, for interconnection to the Wadham 60 kV power line, a new 60 kV gentie line would be required on the CRC Williams facility that would interconnect with the Wadham 60 kV line with a new three-breaker ring bus that would be located on the northwest corner of the CRC Williams facility. Improvements at the Williams Generation Station are not anticipated for interconnection to the 60 kV power line.

Grading would be required for new foundations, for paving of the new internal access roads, and drainage improvements on the CRC Williams facility. Construction at the CRC Williams facility, including offsite improvements required for the interconnection to PG&E's electrical system and any improvements to the interconnection to the UPRR tracks, is expected to take 14 months to complete using approximately 42 construction workers.

The CRC Williams facility can process up to 763,000 gross wet tons of renewable feedstock per year. The source locations for renewable feedstock would primarily comprise orchards in the region, and primarily within Colusa County. Approximately 125 heavy truck trips per day would be utilized to deliver renewable feedstock to the CRC Williams facility. Source locations for the renewable feedstock are expected to be primarily within 75 miles of the CRC Williams facility. Heavy trucks would utilize local area roadways to access I-5, to travel either north or south along I-5 to the CRC Williams facility. Heavy trucks would either utilize the I-5/Husted Road interchange to then travel southbound on the two-lane Frontage Road to the facility or utilize the I-5/Hahn Road interchange to travel northbound on the two-lane Frontage Road to the facility.

Rail cars would be loaded with biocarbon product at the proposed rail car loadout area. A new electric switching locomotive would be utilized on the property to move cars along the rail spur system. Approximately 50 rail cars per week would be utilized to transport biocarbon product on UPRR tracks to one or more major ports in California and/or Oregon for ultimate transport of the biocarbon product via Handymax class vessels.

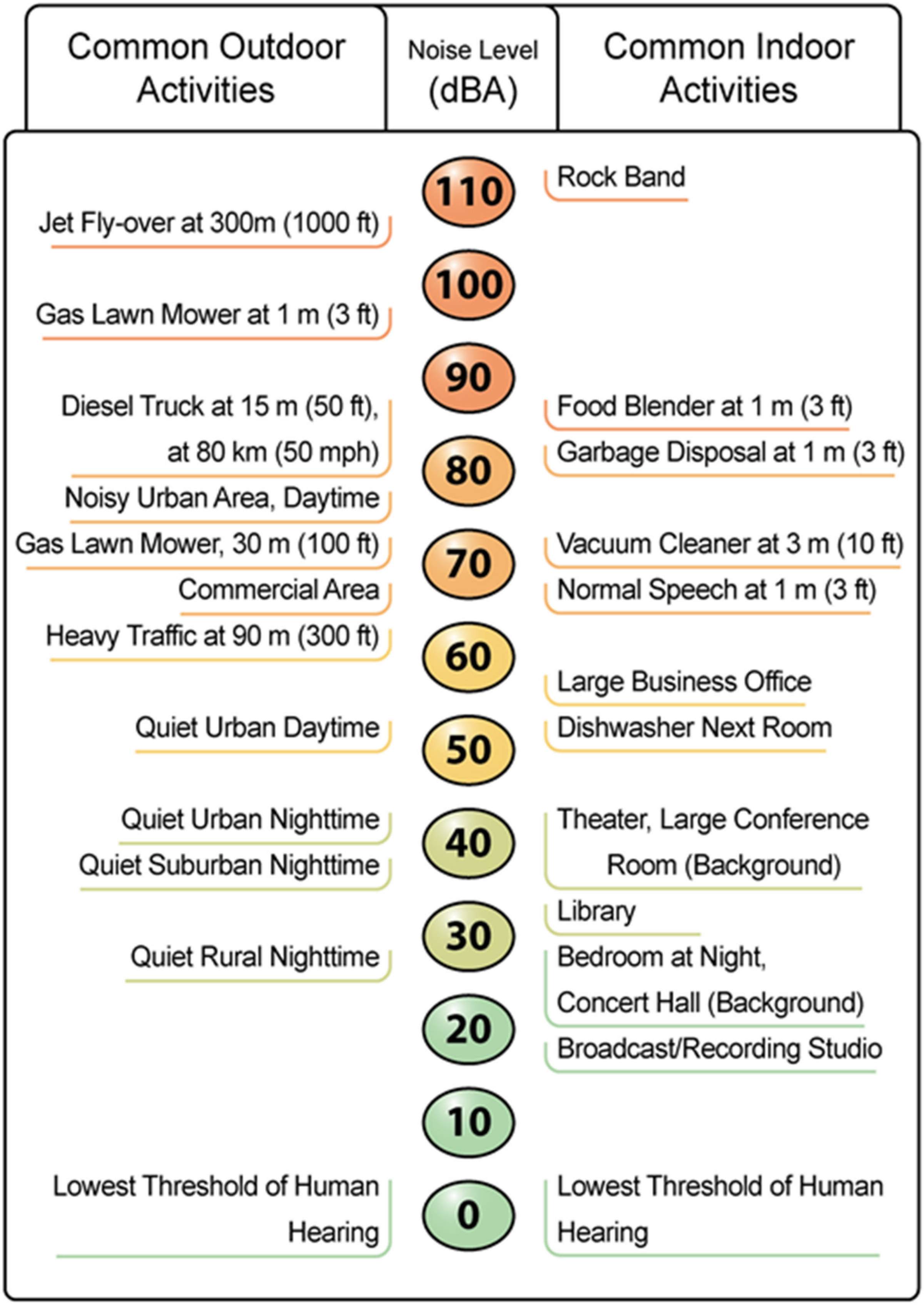
The Project site is currently designated *Industrial* by the County of Colusa (County) General Plan. The Industrial designation identifies areas suitable for a wide range of industrial activities, ranging from light industrial to heavy manufacturing and processing uses. This designation is applied to lands with existing industrial uses, including industrial parks and agricultural support uses, and to lands suited for future industrial uses, where necessary services such as transportation systems (e.g., I-5, SR 20, SR 45 corridors) and utilities and services exist or can be efficiently provided, where disruption of proximate uses will be least, and where the potential for environmental disruption is minimal or can be adequately mitigated.

2.0 ENVIRONMENTAL NOISE AND GROUNDBORNE VIBRATION ANALYSIS

2.1 Fundamentals of Noise and Environmental Sound

2.1.1 Addition of Decibels

The decibel (dB) scale is logarithmic, not linear; therefore, sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted (dBA), an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be three dB higher than one source under the same conditions (Federal Transit Administration [FTA] 2018). For example, a 65-dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by three dB). Under the decibel scale, three



Source: California Department of Transportation (Caltrans) 2020a

Figure 2-1. Common Noise Levels

sources of equal loudness together would produce an increase of five dB. Typical noise levels associated with common noise sources are depicted on Figure 2-1.

2.1.2 Sound Propagation and Attenuation

Noise can be generated by a number of sources including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately six dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately three dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics (Federal Highway Administration [FHWA] 2011). No excess attenuation is assumed for hard surfaces like a parking lot or a body of water.

Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of three dB per doubling of distance is assumed (FHWA 2011).

Noise levels may also be reduced by intervening structures; generally, a single row of detached buildings between the receptor and the noise source reduces the noise level by about five dBA (FHWA 2008), while a solid wall or berm generally reduces noise levels by 10 to 20 dBA (FHWA 2011). However, noise barriers or enclosures specifically designed to reduce site-specific construction noise can provide a sound reduction of 35 dBA or greater (Western Electro-Acoustic Laboratory, Inc. [WEAL] 2000). To achieve the most potent noise-reducing effect, a noise enclosure/barrier must physically fit in the available space, must completely break the "line of sight" between the noise source and the receptors, must be free of degrading holes or gaps, and must not be flanked by nearby reflective surfaces. Noise barriers must be sizable enough to cover the entire noise source and extend lengthwise and vertically as far as feasibly possible to be most effective. The limiting factor for a noise barrier is not the component of noise transmitted through the material, but rather the amount of noise flanking around and over the barrier. In general, barriers contribute to decreasing noise levels only when the structure breaks the line of sight between the source and the receiver.

The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows (Caltrans 2002). The exterior-to-interior reduction of newer residential units is generally 30 dBA or more (Harris Miller, Miller & Hanson Inc. [HMMH] 2006). Generally, in exterior noise environments ranging from 60 dBA average daily noise levels/community noise equivalent level (L_{dn}/CNEL) to 65 dBA L_{dn}/CNEL, interior noise levels can typically be maintained below 45 dBA, a typically residential interior noise standard, with the incorporation of an adequate forced air mechanical ventilation system in each residential building, and standard thermal-pane residential windows/doors with a minimum rating of Sound Transmission Class (STC) 28. STC is an integer rating of how well a building partition attenuates airborne sound. In the U.S., it is widely used to rate interior partitions, ceilings, floors, doors, windows, and exterior wall configurations. In exterior noise environments of 65 dBA L_{dn}/CNEL or greater, a combination of forced-air mechanical ventilation and sound-rated construction methods is often required to meet the interior noise level limit. Attaining the necessary noise reduction from exterior to interior spaces is readily achievable in noise environments less than 75 dBA L_{dn}/CNEL with proper wall construction techniques following California Building Code methods, the selections of proper windows and doors, and the incorporation of forced-air mechanical ventilation systems.

2.1.3 Noise Descriptors

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The noise descriptors most often encountered when dealing with traffic, community, and environmental noise include the average hourly noise level (in L_{eq}) and the average daily noise levels/community noise equivalent level (in L_{dn}/CNEL). The L_{eq} is a measure of ambient noise, while the L_{dn} and CNEL are measures of community noise. Each is applicable to this analysis and defined as follows:

- **Equivalent Noise Level (L_{eq})** is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- **Day-Night Average (L_{dn})** is a 24-hour average L_{eq} with a 10-dBA "weighting" added to noise during the hours of 10:00 pm to 7:00 am to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
- **Community Noise Equivalent Level (CNEL)** is a 24-hour average L_{eq} with a 5-dBA weighting during the hours of 7:00 pm to 10:00 pm and a 10-dBA weighting added to noise during the hours of 10:00 pm to 7:00 am to account for noise sensitivity in the evening and nighttime, respectively.

2.1.3.1 Table 2-1 provides a list of other common acoustical descriptors.

Table 2-1. Common Acoustical Descriptors

Descriptor	Definition
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micropascals (or 20 micronewtons per square meter), where one pascal is the pressure resulting from a force of one newton exerted over an area of one square meter. The sound pressure

Table 2-1. Common Acoustical Descriptors	
Descriptor	**Definition**
	level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micropascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hertz (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded one percent, 10 percent, 50 percent, and 90 percent of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	A 24-hour average L_{eq} with a 10 dBA “weighting” added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
Community Noise Equivalent Level, CNEL	A 24-hour average L_{eq} with a five dBA “weighting” during the hours of 7:00 p.m. to 10:00 p.m. and a 10 dBA “weighting” added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.

The dBA sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about ± one dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source. Close to the noise source, the models are accurate to within about ± one to two dBA.

2.1.4 Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the L_{dn}/CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in dBA noise levels, the following relationships should be noted in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of one dBA cannot be perceived by humans.
- Outside of the laboratory, a three-dBA change is considered a just-perceivable difference.
- A change in level of at least five dBA is required before any noticeable change in community response would be expected. An increase of five dBA is typically considered substantial.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

2.1.5 Effects of Noise on People

2.1.5.1 Hearing Loss

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise.

The Occupational Safety and Health Administration (OSHA) has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over eight hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

2.1.5.2 Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources.

2.2 Fundamentals of Environmental Groundborne Vibration

2.2.1 Vibration Sources and Characteristics

Sources of earthborne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or manmade causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g., factory machinery) or transient (e.g., explosions).

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

PPV is generally accepted as the most appropriate descriptor for evaluating the potential for building damage. For human response, however, an average vibration amplitude is more appropriate because it takes time for the human body to respond to the excitation (the human body responds to an average vibration amplitude, not a peak amplitude). Because the average particle velocity over time is zero, the RMS amplitude is typically used to assess human response. The RMS value is the average of the amplitude squared over time, typically a 1- sec. period (FTA 2018).

Table 2-2 displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in the table should be interpreted with care since vibration may be found to be annoying at much lower levels than those listed, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high-noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Ground vibration can be a concern in instances where buildings shake, and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. For instance, heavy-duty trucks generally generate groundborne vibration velocity levels of 0.006 PPV at 50 feet under typical circumstances, which as identified in Table 2-2 is considered very unlikely to cause damage to buildings of any type. Common sources for groundborne vibration are planes, trains, and construction activities such as earth-moving which requires the use of heavy-duty earth moving equipment.

Table 2-2. Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibration Levels

PPV (inches/second)	Approximate Vibration Velocity Level (VdB)	Human Reaction	Effect on Buildings
0.006–0.019	64–74	Range of threshold of perception	Vibrations unlikely to cause damage of any type
0.08	87	Vibrations readily perceptible	Recommended upper level to which ruins and ancient monuments should be subjected
0.1	92	Level at which continuous vibrations may begin to annoy people, particularly those involved in vibration sensitive activities	Virtually no risk of architectural damage to normal buildings
0.2	94	Vibrations may begin to annoy people in buildings	Threshold at which there is a risk of architectural damage to normal dwellings
0.4–0.6	98–104	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Architectural damage and possibly minor structural damage

Source: Caltrans 2020b

For the purposes of this analysis, a VdB descriptor is used to evaluate construction-generated vibration for building damage and human complaints.

3.0 EXISTING ENVIRONMENTAL NOISE SETTING

3.1 Noise Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as hospitals, historic sites, cemeteries, and certain recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses. The nearest noise-sensitive receptor to the Project site is a residence located across Frontage Road approximately 150 feet west of the Project's western boundary. There is another residence, fronting Myers Road on the west side of I-5, located approximately 1,740 feet west of the Project site. The next-nearest residence sits approximately 2,150 feet east of the Project site on Myers Road.

3.2 Existing Ambient Noise Environment

Noise in Colusa County is generated by a variety of sources, including, but not limited to, vehicle traffic, airport operations, agricultural activities, and industrial operations. The noise environment in the proposed Project area is impacted by various noise sources. Mobile sources of noise, especially cars and trucks on I-5 and Frontage Road, are the most common and significant sources of noise in the Project area. Industrial land uses in the vicinity are also substantial contributors of noise.

Per the California Department of Transportation (Caltrans) traffic counts (2020), the roadway segment on I-5 between Hahn Road and Husted Road, which traverses the Project area, has an average daily traffic count of 32,800 vehicles. According to the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108), which calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions; this amount of roadway traffic on I-5 generates an ambient noise level of 75.3 dBA L_{dn} at 100 feet from the centerline. This calculation is generally consistent with the roadway noise level prediction contained in the County General Plan Environmental Impact Report (2011), which identified an ambient noise level of 80.7 dBA L_{dn} generated by this segment of I-5.

Vehicular noise varies with the volume, speed, and type of traffic. Slower traffic produces less noise than fast-moving traffic. Trucks typically generate more noise than cars. Infrequent or intermittent noise also is associated with vehicles including sirens, vehicle alarms, slamming of doors, garbage and construction vehicle activity, and honking of horns. These noises add to urban noise and are regulated by a variety of agencies.

The Project site is affected by existing railway noise. The railway corridor traversing the western boundary of the Project site extends from a Union Pacific Railroad (UPRR) junction in Davis to a UPRR junction in

Tehama. The railway is used to haul lumber, beverage products, food products, steel pipe, agricultural products and construction material. According to the Colusa County General Plan Environmental Impact Report (2011), this railway generates day-night noise levels of 60 dBA L_{dn} at a distance of 109 feet, 65 dBA L_{dn} at a distance of 51 feet, and 70 dBA L_{dn} at 23 feet. Project operations would largely occur over 100 feet from this railway at the nearest.

The Project site is located outside of any airport land use plan. Furthermore, the Project site is located beyond two miles from any airport or airstrip. The Colusa County Airport is the closest airport to the Project site and is located approximately eight miles to the northeast. There are also several private airstrips in Colusa County, the nearest being a private gliderport in the City of Williams approximately four miles north of the Project site and McCabe Ranch airfield approximately six miles south of the Project site. Thus, the ambient noise environment of the Project area is not heavily influenced by aircraft noise.

The American National Standards Institute (ANSI) Standard 12.9-2013/Part 3 "Quantities and Procedures for Description and Measurement of Environmental Sound – Part 3: Short-Term Measurements with an Observer Present" provides a table of approximate background sound levels in L_{dn}, daytime L_{eq}, and nighttime L_{eq}, based on land use and population density. The ANSI standard estimation divides land uses into six distinct categories. Descriptions of these land use categories, along with the typical daytime and nighttime levels, are provided in Table 3-1. At times, one could reasonably expect the occurrence of periods that are both louder and quieter than the levels listed in the table. ANSI notes, "*95% prediction interval [confidence interval] is on the order of +/- 10 dB*."

Table 3-1. ANSI Standard 12.9-2013/Part 3 A-weighted Sound Levels Corresponding to Land Use and Population Density

Category	Land Use	Description	People per Square Mile	Typical L_{dn}	Daytime L_{eq}	Nighttime L_{eq}
1	Noisy Commercial & Industrial Areas and Very Noisy Residential Areas	Very heavy traffic conditions, such as in busy, downtown commercial areas; at intersections for mass transportation or for other vehicles, including elevated trains, heavy motor trucks, and other heavy traffic; and at street corners where many motor buses and heavy trucks accelerate.	63,840	67 dBA	66 dBA	58 dBA
2	Moderate Commercial & Industrial Areas and Noisy Residential Areas	Heavy traffic areas with conditions similar to Category 1, but with somewhat less traffic; routes of relatively heavy or fast automobile traffic, but where heavy truck traffic is not extremely dense.	20,000	62 dBA	61 dBA	54 dBA

Category	Land Use	Description	People per Square Mile	Typical L_{dn}	Daytime L_{eq}	Nighttime L_{eq}
3	Quiet Commercial, Industrial Areas and Normal Urban & Noisy Suburban Residential Areas	Light traffic conditions where no mass transportation vehicles and relatively few automobiles and trucks pass, and where these vehicles generally travel at moderate speeds; residential areas and commercial streets, and intersections, with little traffic compose this category.	6,384	57 dBA	55 dBA	49 dBA
4	Quiet Urban & Normal Suburban Residential Areas	These areas are similar to Category 3, but for this group, the background is either distant traffic or is unidentifiable; typically, the population density is one-third the density of Category 3.	2,000	52 dBA	50 dBA	44 dBA
5	Quiet Residential Areas	These areas are isolated, far from significant sources of sound, and may be situated in shielded areas, such as a small wooded valley.	638	47 dBA	45 dBA	39 dBA
6	Very Quiet Sparse Suburban or rural Residential Areas	These areas are similar to Category 4 but are usually in sparse suburban or rural areas; and, for this group, there are few if any nearby sources of sound.	200	42 dBA	40 dBA	34 dBA

Table 3-1. ANSI Standard 12.9-2013/Part 3 A-weighted Sound Levels Corresponding to Land Use and Population Density

Source: The American National Standards Institute (ANSI) 2013

3.2.1 Existing Ambient Noise Measurements

The 49-acre site at the northeast corner of the Myers Road / Frontage Road intersection currently accommodates an existing, non-operational tomato processing facility comprising approximately 161,000 square feet of existing structures including existing loading docks, railroad access, and two existing water wells and one water well for irrigation. The site is bound by a Wadham Energy Company facility just north of the Project site with agricultural lands beyond, agricultural land and a scattering of rural residences to the east and south, and Frontage Road to the west, with orchard land and a single-family residence beyond. I-5 is approximately 1,000 feet (0.3 mile) west of the Project site.

In order to quantify existing ambient noise levels in the Project area, ECORP Consulting, Inc. conducted one long-term noise measurement, spanning 24-hours, between April 27 and April 28, 2021 near the northwest corner of the Project site. Additionally, five short-term measurements spanning 15 minutes each were conducted in the Project vicinity (see Attachment A). The noise measurements are representative of typical existing noise exposure within and around the Project site. The average noise levels and sources of noise measured at each location are listed in Table 3-2.

As shown in Table 3-2, the long-term ambient recorded noise level adjacent to the northwest corner of the Project site was measured at 74.1 dBA L_{dn}, which as described in Table 3-1 is considered ambient noise Category 1 by the American National Standards Institute and a noise level indicative of very heavy traffic conditions, including heavy-duty truck traffic. Environmental noise levels are generally considered to be high when above 70 dBA L_{dn}. This is consistent with the observations of ECORP staff who noted "loud" conditions as a result of heavy-duty truck traffic and accelerating heavy-duty trucks on Frontage Road, as well as traffic on I-5.

Table 3-2. Existing (Baseline) Noise Measurements

Location Number	Location	L_{dn}	L_{eq} dBA	L_{min} dBA	L_{max} dBA	Time
Long-Term 24-Hour Measurement						
1	Adjacent to Northwest Corner of the Project Site, Between Frontage Road and Railroad Corridor	**74.1**	69.4	48.0	92.4	April 27, 10:07 a.m. - April 28, 10:07 a.m.
Short-Term 15 Minute Measurements						
2	Myers Road, Approximately 0.5 Mile East of the Project Site	N/A	**54.6**	39.9	78.0	April 28, 2021 11:44 a.m. -11:49 p.m.
3	Myers Road, Approximately 0.3 Mile West of Lone Star Road	N/A	**60.3**	34.0	81.5	April 28, 2021 12:08 p.m. - 12:23 p.m.
4	Ware Road, Approximately 0.4 mile east of the Interstate 5	N/A	**43.7**	36.9	53.0	April 28, 2021 12:38 p.m. – 12:53 p.m.
5	Lone Star Road, Approximately 0.4 mile south of Ware Road	N/A	**72.3**	38.2	88.5	April 30, 2021 11:47 a.m. – 12:02 p.m.
6	Intersection of Myers Road and Zumwalt Road.	N/A	**56.7**	31.7	72.4	April 30, 2021 11:22 a.m. – 11:37 a.m.

Source: Measurements were taken by ECORP with a Larson Davis SoundExpert LxT precision sound level meter, which satisfies the American National Standards Institute for general environmental noise measurement instrumentation. Prior to the measurements, the SoundExpert LxT sound level meter was calibrated according to manufacturer specifications with a Larson Davis CAL200 Class I Calibrator. See Attachment A for noise measurement outputs.

As also shown in Table 3-2, the short-term ambient recorded noise levels in the Project vicinity range from 43.7 to 72.3 dBA L_{eq}. The most common noise in the Project vicinity is produced by automotive vehicles on County roadways and agricultural activities. Although it is noted that the noise measurement conducted on Location #5 was influenced by an emergency siren.

4.0 REGULATORY FRAMEWORK

4.1 Federal

4.1.1 Occupational Safety and Health Act (OSHA) of 1970

OSHA regulates onsite noise levels and protects workers from occupational noise exposure. To protect hearing, worker noise exposure is limited to 90 dB with A-weighting (dBA) over an eight-hour work shift (29 Code of Federal Regulations 1910.95). Employers are required to develop a hearing conservation program when employees are exposed to noise levels exceeding 85 dBA. These programs include provision of hearing protection devices and testing employees for hearing loss on a periodic basis.

4.2 State

4.2.1 State of California General Plan Guidelines

The State of California regulates vehicular and freeway noise affecting classrooms, sets standards for sound transmission and occupational noise control, and identifies noise insulation standards and airport noise/land-use compatibility criteria. The State of California General Plan Guidelines (State of California 2003), published by the Governor's Office of Planning and Research (OPR), also provides guidance for the acceptability of projects within specific CNEL contours. The guidelines also present adjustment factors that may be used in order to arrive at noise acceptability standards that reflect the noise-control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

4.2.2 State Office of Planning and Research Noise Element Guidelines

The State OPR Noise Element Guidelines include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The Noise Element Guidelines contain a land-use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the CNEL.

4.3 Local

4.3.1 Colusa County General Plan Noise Element

The Noise Element of the Colusa County General Plan provides a basis for comprehensive local policies to control and abate environmental noise and to protect the citizens of Colusa County from excessive noise exposure. By identifying noise-sensitive land uses and establishing compatibility guidelines for land use and noises, noise considerations will influence the general distribution, location, and intensity of future land uses. The result is that effective land use planning and mitigation can alleviate the majority of noise problems.

The Noise Element sets various objectives and policies that would apply to projects within unincorporated areas of Colusa County. The following goals are applicable to the proposed Project:

Objective N 1-A: Ensure that Existing and Planned Land Uses are Compatible with the Current and Projected Noise Environment.

Policy N 1-1*: New proposed stationary noise sources shall not result in noise levels that exceed the standards of [Table 4-1], as measured immediately within the property line of lands designated for noise-sensitive uses.*

Table 4-1. Exterior and Interior Noise Level Performance Standards for Projects Affected by or Including Non-Transportation Noise Sources

Type of Use	Interior Noise Level Standard	Exterior Noise Level[1]	
		Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
All Sensitive Land Uses	45 dBA L_{max}	55 dBA Leq	45 dBA Leq
All Sensitive Land Use in High Noise Traffic Corridor2	N/A	65 dBA Leq	65 dBA Leq
New Residential Affected by Existing Seasonal Agricultural Noise	40 dBA L_{dn}	N/A	N/A

Source: Colusa County 2012; 2021
[1]Exterior noise level standard to be applied at the property line of the receiving land use or at a designated outdoor activity area (at the discretion of the Planning Director) of the new development. For mixed-use type projects, the exterior noise level standard may be waived (at the discretion of the Planning Director) if the project does not include a designated activity area and mitigation of property line noise is not practical. In this case, the interior standard would still apply.
Each of the exterior noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises (e.g., humming sounds, outdoor speaker systems).
These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).
The County can impose noise level standards that are more restrictive than those specified above based upon determination of existing low ambient noise levels.
[2]Noise standards for uses located in High Noise Traffic Corridors promulgated by the Colusa County Code (2021).

Policy N 1-2: *Ensure that noise sources do not interfere with sleep by applying an interior maximum noise level criterion (L_{max}) of 45 dBA in sleeping areas, for sensitive receptors.*

Policy N 1-5: *The following criteria shall be used to determine the significance, for projects required by the California Environmental Quality Act to analyze noise impacts, of roadway noise impacts for roadway improvement, development, and other projects that increase roadway noise:*

- *Where existing traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +5 dB L_{dn} increase in roadway noise levels will be considered significant; and*
- *Where existing traffic noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in roadway noise levels will be considered significant; and*
- *Where existing traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a + 1.5 dB L_{dn} increase in roadway noise levels will be considered significant.*

Policy N 1-6: *Require new land use development proposals to address potential stationary and mobile noise impacts and land use incompatibilities from aircraft noise, train travel, and truck travel.*

Policy N 1-8: *Require new development projects and long-term planning projects to conform with the County's Airport Safety and Noise land use criteria, as identified in the Colusa County Airport Comprehensive Land Use Plan (CLUP).*

Policy N 1-12*: Where noise mitigation measures are required to achieve the standards of [Tables 4-1 or 4-2], the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been considered and integrated into the project. Landscaped berms shall be considered as a preferred mitigation option over sound walls.*

Policy N 1-16*: In making a determination of impact under the California Environmental Quality Act (CEQA), a significant impact will occur if the project results in an exceedance of the noise level standards contained in this Noise Element, or the project will result in an increase in ambient noise levels by more than 3 dBA.*

Policy N 1-17*: Require use of site design measures, such as the use of building design and orientation, buffer space, use of berms, and noise attenuation measures applied to the noise source, to reduce impacts to the maximum extent feasible and practical before mitigating noise impacts through use of sound walls. The use of sound walls or noise barriers to attenuate noise from existing noise sources is discouraged, but may be allowed if the wall is architecturally incorporated into the project design, blends into the natural landscape, and does not adversely affect significant public view corridors.*

Action N 1-K: As part of the project review and approval process, require construction projects and new development anticipated to generate a significant amount of ground borne vibration to ensure acceptable interior vibration levels at nearby noise-sensitive uses based on Federal Transit Administration criteria.

4.3.2 Colusa County Code

The County's regulations with respect to noise are included in Chapter 13, Noise Regulations, of the County Code. Section 13-8, General Restrictions – Special Provisions, of Chapter 13 states that construction alteration, repair, or maintenance activities which are authorized by valid County permit or business license shall be limited to the hours of 7:00 a.m. and 7:00 p.m. on Mondays through Fridays, and between the hours of 8:00 a.m. and 8:00 p.m. on Saturdays and Sundays as long as the noise level at any point outside of the property plane of the project does not exceed 86 dBA. Impact tools are exempted from this noise limitation provided that such impact tools and equipment have intake and exhaust mufflers recommended by manufacturers thereof and approved by the director of public works as best accomplishing maximum noise attenuation, and that pavement breakers and jackhammers also be equipped with acoustically attenuating shields or shrouds recommended by the manufacturers thereof and approved by the director of public works as best accomplishing maximum noise attenuation.

4.3.3 City of Williams

The Project would involve temporary construction-related activities within the City of Williams as the Project proposes interconnection to either PG&E's Williams 1101 12 kV distribution line or PG&E's Wadham 60 kV power line to PG&E's Williams Generating Station in order to export sale of electric power to the grid. Both existing lines are located on the same power poles along Frontage Road running north to the PG&E Williams Generating Station in Williams. It is assumed that PG&E would require reconductoring along this route and may require replacement of some or all of the power poles along this route. The City of Williams' regulations with respect to noise are included in Chapter 13, Noise, of the City Municipal Code. Chapter 13 states that the erection, excavation, demolition, alteration or repair of any building or structure, or the operation of any construction equipment, within a residential neighborhood or within 500 feet of a residential neighborhood shall be limited to the hours of 7:00 a.m. and 10:00 p.m. on any day. The City does not promulgate a numeric noise threshold standard for construction noise.

5.0 IMPACT ASSESSMENT

5.1 Thresholds of Significance

The impact analysis provided below is based on the following California Environmental Quality Act Guidelines Appendix G thresholds of significance. The Project would result in a significant noise-related impact if it would produce the following:

1) 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.

2) Generation of excessive groundborne vibration or groundborne noise levels.

3) 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.

For purposes of this analysis and where applicable, the County noise standards were used for evaluation noise impacts as a result of the proposed Project. Specifically, Project construction noise is compared against the threshold of 86 dBA as promulgated by Chapter 13, Noise Regulations, of the County Code. Additionally, Project generated groundborne vibration during construction is calculated and evaluated against the significance criteria established by the FTA, consistent with County General Plan Noise Element Action N 1-K. Project noise generated onsite during long-term operations, as experienced at nearby noise-sensitive receptors, is assessed against the County's exterior and interior noise level performance standards as established in Policy N 1-1 of the Noise Element and Chapter 13, Noise Regulations, of the County Code (see Table 4-1 above). Specifically, the 65 dBA standard protecting all sensitive land uses within a High Noise Traffic Corridor is applied since the Project site and nearest sensitive receptors are located in the High Noise Traffic Corridor adjacent to I-5. Offsite traffic noise instigated by the Project is calculated and compared against the County's measure of substantial increase for transportation noise, as established by Noise Element Policy N 1-5, which states:

- Where existing traffic noise levels are less than 60 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +5 dB L_{dn} increase in roadway noise levels will be considered significant; and
- Where existing traffic noise levels range between 60 and 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a +3 dB L_{dn} increase in roadway noise levels will be considered significant; and
- Where existing traffic noise levels are greater than 65 dB L_{dn} at the outdoor activity areas of noise-sensitive uses, a + 1.5 dB L_{dn} increase in roadway noise levels will be considered significant.

5.2 Methodology

This analysis of the existing and future noise environments is based on noise prediction modeling and empirical observations. Predicted construction noise levels were calculated utilizing the FHWA's Roadway Construction Model. Groundborne vibration levels associated with construction-related activities for the Project have been evaluated utilizing typical groundborne vibration levels associated with construction equipment. Potential groundborne vibration impacts related to structural damage and human annoyance were evaluated, taking into account the distance from construction activities to nearby structures and typically applied criteria for structural damage and human annoyance. Transportation-source noise levels in the Project vicinity were calculated using the FHWA Highway Noise Prediction Model (FHWA-RD-77-108). Onsite stationary source noise levels have been calculated with the SoundPLAN 3D noise model, which predicts noise propagation from a noise source based on the location, noise level, and frequency spectra of the noise sources as well as the geometry and reflective properties of the local terrain, buildings, and barriers.

5.3 Impact Analysis

5.3.1 Project Construction Noise

5.3.1.1 Would the Project Result in Short-Term Construction-Generated Noise in Excess of Standards?

Onsite Construction Noise

Onsite construction noise associated with the proposed Project would be temporary and would vary depending on the nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for onsite construction activities as well as construction vehicle traffic on area roadways. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). During onsite construction, exterior noise levels could negatively affect sensitive land uses in the vicinity of the construction site.

The nearest noise-sensitive receptor to the Project site is a residential property located across Frontage Road approximately 150 feet west of the Project's western boundary. There is another residence, fronting Myers Road on the west side of I-5, located approximately 1,740 feet west of the Project site. The next-nearest residence sits approximately 2,150 feet east of the Project site on Myers Road. However, it is acknowledged that the majority of construction equipment is not situated at any one location during construction activities, but rather spread throughout the Project site and at various distances from sensitive receptors. Therefore, this analysis employs FTA guidance for calculating construction noise, which recommends measuring construction noise produced by all construction equipment from the center of the Project site (FTA 2018), which in this case is approximately 580 feet from the Project property line at the nearest. As previously described, the County Code limits construction to the hours of 7:00 a.m. and 7:00 p.m. on Mondays through Fridays, and between the hours of 8:00 a.m. and 8:00 p.m. on Saturdays and Sundays as long as the noise level at any point outside of the property plane of the Project does not exceed 86 dBA.

To estimate the worst-case onsite construction noise levels that may occur at the nearest noise-sensitive receptors in the Project vicinity, the construction equipment noise levels were calculated using the Roadway Noise Construction Model for the construction process and compared against the construction-related noise level threshold of 86 dBA.

Table 5-1. Onsite Construction Average (dBA) Noise Levels at Nearest Receptor			
Equipment	**Estimated Exterior Construction Noise Level @ Project Property Plane**	**Construction Noise Standards (dBA Leq)**	**Exceeds Standard?**
Facility Construction			
Pickup Truck (1)	49.7 dBA	*86 dBA*	**No**
Gang Truck (1)	49.0 dBA	*86 dBA*	**No**
Air Compressor (1)	52.4 dBA	*86 dBA*	**No**
Water Trucks (2)	49.0 dBA (each)	*86 dBA*	**No**
Dump Truck (1)	51.2 dBA	*86 dBA*	**No**
Mechanic Truck (1)	49.0 dBA	*86 dBA*	**No**
Lube Truck (1)	49.0 dBA	*86 dBA*	**No**
Boom Truck (1)	46.4 dBA	*86 dBA*	**No**
Reach Lift (1)	46.4 dBA	*86 dBA*	**No**
Side Booms (3)	46.4 dBA (each)	*86 dBA*	**No**
Cranes (2)	51.3 dBA (each)	*86 dBA*	**No**
Loaders (5)	53.8 dBA (each)	*86 dBA*	**No**
Tractors (2)	58.7 dBA (each)	*86 dBA*	**No**
Backhoes (2)	52.3 dBA (each)	*86 dBA*	**No**
Excavators (7)	55.4 dBA (each)	*86 dBA*	**No**
Dozer (1)	56.4 dBA	*86 dBA*	**No**
Blade/Scraper (1)	58.3 dBA	*86 dBA*	**No**
Scissor Lift (1)	46.4 dBA	*86 dBA*	**No**
Vacuum Sweeper (1)	50.3 dBA	*86 dBA*	**No**
Asphalt Grinder (1)	60.7 dBA	*86 dBA*	**No**
Paver (1)	52.9 dBA	*86 dBA*	**No**
Combined Equipment	**70.4 dBA**	*86 dBA*	**No**

Source: Construction noise levels were calculated by ECORP Consulting, Inc. using the FHWA Roadway Noise Construction Model (FHWA 2006). Refer to Attachment B for Model Data Outputs.

Notes: Construction equipment assumptions were based off construction-related information provided by the Project proponent. Consistent with FTA recommendations for calculating construction noise, construction noise was measured from the center of the Project site (FTA 2018), which is 580 feet from the Project boundary.

L_{eq} = The equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.

As shown in Table 5-1, no individual or cumulative pieces of construction equipment would exceed the 86 dBA County construction noise threshold during onsite Project construction activities. It is noted that construction noise was modeled on a worst-case scenario in which all pieces of construction equipment are operating at the same time and at the highest level of intensity. It is very unlikely that noise levels would reach those predicted in Table 5-1 at the Project boundary.

Offsite Construction Noise

In addition to onsite construction, the Project proposes interconnection to either PG&E's Williams 1101 12 kV distribution line or PG&E's Wadham 60 kV power line to PG&E's Williams Generating Station in order to export sale of electric power to PG&E. Both existing lines are located on the same power poles along Frontage Road running north to the PG&E Williams Generating Station in Williams. It is assumed that PG&E will require reconductoring along this route and may require replacement of some or all of the power poles along this route.

To estimate the worst-case onsite construction noise levels that may occur at the nearest noise-sensitive receptors to proposed high voltage line reconductoring activities, the construction equipment noise levels were calculated using the Roadway Noise Construction Model for the construction process and compared against the County construction-related noise level threshold of 86 dBA. As previously stated, a portion of this proposed activity will occur within the City Limits of Williams; however, the City does not promulgate a numeric noise threshold standard for construction noise. Therefore, for the purpose of this analysis, all offsite construction noise is compared to the 86 dBA construction-related noise level threshold.

Table 5-2. High Voltage Conductor Stringing Activity Average (dBA) Noise Levels at Nearest Receptors (50 Feet Distant)

Equipment	Estimated Exterior Construction Noise Level @ Project Property Plane	Construction Noise Standards (dBA Leq)	Exceeds Standard?
Facility Construction			
Bucket Truck	71.0 dBA	*86 dBA*	**No**
Air Compressor	73.7 dBA	*86 dBA*	**No**
Other Construction Equipment (2)	82.0 dBA (each)	*86 dBA*	**No**
Man Lifts (2)	67.7 dBA (each)	*86 dBA*	**No**
Combined Equipment	**85.6 dBA**	*86 dBA*	**No**

Source: Construction noise levels were calculated by ECORP Consulting, Inc. using the FHWA Roadway Noise Construction Model (FHWA 2006). Refer to Attachment B for Model Data Outputs.

Table 5-2. High Voltage Conductor Stringing Activity Average (dBA) Noise Levels at Nearest Receptors (50 Feet Distant)			
Equipment	**Estimated Exterior Construction Noise Level @ Project Property Plane**	**Construction Noise Standards (dBA Leq)**	**Exceeds Standard?**
Facility Construction			

Leq = The equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the Leq of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.

As shown in Table 5-2, no individual or cumulative pieces of construction equipment would exceed the 86 dBA County construction noise threshold during high voltage conductor stringing activities. It is noted that such noise was modeled on a worst-case scenario in which all pieces of equipment are operating at the same time and at the highest level of intensity.

Offsite Construction Worker and Material Haul Truck Traffic Noise

Project construction would result in additional traffic on adjacent roadways over the time period that construction occurs. According to the Project proponent, the maximum number of construction workers traveling to and from the Project site on a single day would be 42. Assuming each worker arrives in their own vehicle and takes lunch offsite, 42 workers would generate approximately 168 daily traffic trips during each day of construction [42 workers x 4 trips = 168 daily trips]. The Project proponent has also identified the need to export up to 12,509 cubic yards of soil material. Accounting for a capacity of 16 cubic yards per haul truck, Project construction would require up to 1,564 one-way haul truck trips over the 14 months of construction [12,509 cubic yards ÷ 16 cubic yard truck capacity = 782 incoming material-loaded trucks and 782 outgoing empty trucks. 782 + 782 = 1,564 total haul truck trips]. Assuming an equal distribution of visiting haul truck trips over the 14-month construction period results in 6 haul truck trips daily. Therefore, Project construction would have the potential to generate an additional 174 daily traffic trips on Project vicinity roadways [168 worker trips + 6 haul truck trips = 174 total daily traffic trips].

According to the Caltrans *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (2013), doubling of traffic on a roadway is required to result in an increase of 3 dB (outside of the laboratory, a 3-dBA change is considered a just-perceivable difference). The majority of this construction-related traffic trips would access the Project via I-5 to Frontage Road and Project construction would not result in a long-term, consistent doubling of traffic on either of these facilities. As previously stated, the roadway segment on I-5 between Hahn Road and Husted Road, which traverses the Project area, has an average daily traffic count of 32,800 vehicles (Caltrans 2020). Therefore, the addition of Project construction generated traffic would not result in a doubling of traffic on I-5. As identified in the Colusa County General Plan (2012), Frontage Road is classified as a "Major Collector". Major collector roadways are high-capacity facilities, just below major arterials on the road hierarchy of traffic flow and speed. The primary function of a major collector road is to deliver traffic from minor collector roads to arterials and freeways at the highest level of service possible. Thus, the addition of 174 daily trips to the major collector, Frontage Road, would not result in a doubling of traffic.

As previously described, the Project proposes interconnection to PG&E's Williams Generating Station located on 5th Street within the City of Williams in order to export sale of electric power to PG&E. It is assumed that PG&E will require reconductoring along this route. This activity would occur along Frontage Road running north to the Williams City Limits where Frontage Road becomes 7th Street. According to the City of Williams General Plan (2012), 7th Street is the only designated Major Collector in Williams. As previously described, major collector roadways are high-capacity facilities, just below major arterials on the road hierarchy of traffic flow and speed. The primary function of a major collector road is to deliver traffic from minor collector roads to arterials and freeways at the highest level of service possible. The minimal daily trips associated with reconductoring would not result in a doubling of traffic on these roadways, and its contribution to existing traffic noise would not be perceptible.

For these reasons, the contribution to existing noise during Project construction, both onsite and offsite, would not be perceptible.

5.3.2 Project Operational Noise

5.3.2.1 Would the Project Result in a Substantial Permanent Increase in Ambient Noise Levels in Excess of County Standards During Operations?

As previously described, noise-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, places of worship, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise sensitive and may warrant unique measures for protection from intruding noise. The nearest noise-sensitive receptor to the Project site is a residential property located across Frontage Road approximately 150 feet west of the Project's western boundary. There is another residential property, fronting Myers Road on the west side of I-5, located approximately 1,740 feet west of the Project site. The next-nearest residential property sits approximately 2,150 feet east of the Project site on Myers Road.

Project Operational Offsite Traffic Noise

Project operation would result in additional traffic on adjacent roadways, thereby increasing vehicular noise in the Project area. As shown in Table 3-2 above, the long-term ambient recorded noise level measured at the location between the northwest corner of the Project site and Frontage Road, and just north of the residential property on Frontage Road, was measured at 74.1 dBA L_{dn}, a noise level indicative of very heavy traffic conditions, including heavy-duty truck traffic. Per Colusa County General Plan Noise Element Policy N 1-5, where existing traffic noise levels are greater than 65 dBA L_{dn} at the outdoor activity areas of noise-sensitive uses, a +1.5 dBA L_{dn} increase in roadway noise levels will be considered significant.

The Project is anticipated to generate approximately 125 heavy-duty truck trips daily. Additionally, the Project would accommodate approximately 200 employee trips daily (the Project would maintain weekday staffing levels of 50 employees. Assuming each employee arrives in their own vehicle and takes lunch offsite, 50 employees would generate approximately 200 daily traffic trips [50 workers x 4 trips = 200 daily trips]). Thus, the Project is expected to generate 325 daily traffic trips during operations. Most of this operational traffic would access the Project site via I-5 to Frontage Road. However, it is expected that Myers Road would also be utilized in both directions. Table 5-3 shows the calculated offsite roadway noise levels under existing traffic levels compared to future traffic levels with operation of the Project. The calculated noise levels as a result of the Project at affected sensitive land uses are compared to the noise standards promulgated by the County of Colusa. Specifically, a +1.5 dBA L_{dn} increase in roadway noise levels as a result of the Project would be considered significant. This level of noise increase is considered significant since the long-term ambient recorded noise level measured at the Project vicinity is greater than 65 dBA L_{dn}.

Table 5-3. Existing Plus Project Conditions - Predicted Traffic Noise Levels1

Roadway Segment	Surrounding Uses	L_{dn} at 100 feet from Centerline of Roadway		dBA Increase	Noise Standard (dBA L_{dn})	Exceed Standard?
		Existing Conditions	Existing + Project Conditions			
Interstate 5						
Between Hahn Road & Husted Road Exits	Agricultural & Residential	75.3 dBA	75.4 dBA	**+0.1**	>1.5	**No**
Frontage Road2						
Between Myers Road & Husted Road	Agricultural, Residential, & Industrial	74.1 dBA[3]	74.1 dBA	**+0.0**	>1.5	**No**
Myers Road4						
West of Frontage Road	Agricultural, Residential, & Industrial	54.7 dBA	55.4 dBA	**+0.7**	>1.5	**No**
East of Frontage Road	Agricultural & Residential	57.9 dBA	58.2 dBA	**+0.3**	>1.5	**No**

Source: Traffic noise levels were calculated by ECORP Consulting using the FHWA roadway noise prediction model. Refer to Attachment C for traffic noise modeling assumptions and results.
[1] 80 percent of all Project traffic is assumed to traverse both Frontage Road and I-5. 10 percent of all Project traffic is assumed to travel Myers Road, west of Frontage Road, and another 10 percent of all Project traffic is assumed to travel Myers Road, east of Frontage Road.
[2] While it is acknowledged that a portion of Project traffic may travel south on Frontage Road from the Project site, between Myers Road and the Hahn Road on-ramp, there are no land use receptors along this roadway segment and therefore Project traffic noise on this roadway segment was not analyzed.

Table 5-3. Existing Plus Project Conditions - Predicted Traffic Noise Levels1

[3] Existing noise levels at this roadway segment was determined by conducting a long-term noise measurement, spanning 24-hours, between April 27 and April 28, 2021 near the northwest corner of the Project site. This measurement was taken by ECORP with a Larson Davis SoundExpert LxT precision sound level meter, which satisfies the American National Standards Institute for general environmental noise measurement instrumentation. Prior to the measurements, the SoundExpert LxT sound level meter was calibrated according to manufacturer specifications with a Larson Davis CAL200 Class I Calibrator.
[4] Existing traffic noise generated on Myers Road is based on traffic data derived from the County General Plan Environmental Impact Report (2011).

As shown in Table 5-3, no roadway segment would experience an increase of noise beyond the County significance standards as a result of the Project.

As previously described, the Project vicinity is characterized by its "loud" conditions as a result of heavy-duty truck traffic and accelerating heavy-duty trucks on Frontage Road, as well as traffic on Interstate 5. The Project area is considered to experience ambient noise Category 1 by the American National Standards Institute, defined as "noisy commercial and industrial areas and very noisy residential areas". The decibel scale is logarithmic, not linear; therefore, sound levels cannot be added or subtracted through ordinary arithmetic. For instance, two sound levels 10 dB apart differ in acoustic energy by a factor of 10, and when combining noise levels that differ by more than 10 dBA, the lower noise value does not contribute to the total noise level (Caltrans 2013). Thus, it is for these reasons that while the Project would contribute 125 heavy-duty truck trips and approximately 200 employee trips daily to the roadways surrounding the Project site, particularly Frontage Road and I-5, the overall ambient noise environment is only slightly affected, and no roadway segment would experience an increase of noise beyond the County significance standards as a result of the Project.

Project Operations-Onsite Noise Sources

The primary onsite operational noise associated with the proposed Project would be manufacturing and shipping-related activity, such as trucks idling and maneuvering the site, stationary machinery, industrial shipping yard activities, and the operation of train cars on the onsite rail spur. The County of Colusa's stationary source noise regulations are contained in Policy N 1-1 of the Noise Element and Chapter 13, *Noise Regulations*, of the County Code (see Table 4-1 above). The maximum exterior operational Project-generated noise as experienced at sensitive residential uses within a High Noise Traffic Corridor is 65 dBA L_{eq}.

Stationary source noise levels have been calculated with the SoundPLAN 3D noise model, which predicts noise propagation based on the location, noise level, and frequency spectra of the noise sources as well as the geometry and reflective properties of the local terrain, buildings and barriers. At the time of prepare this Noise Impact Assessment, Project building size, orientation and specific location of truck loading docks and location of specific mechanical equipment was not available. As such, a worst-case analysis was performed. Specifically, inputted noise modeling parameters consisting of large area sources encompassing the majority of the Project site were employed. Several point sources were also included in order to provide a conservative analysis (see Attachment D and Figure 5-1 below).

Noise propagation from onsite Project operations, as calculated using the SoundPLAN 3D noise model, is shown in Table 5-4, which identifies the predicted Project noise levels at three locations in the Project vicinity. Additionally, a noise contour graphic (Figure 5-1) has been prepared to depict the predicted noise levels in the Project vicinity as a result of onsite Project operations.

Table 5-4. Modeled Operational Noise Levels

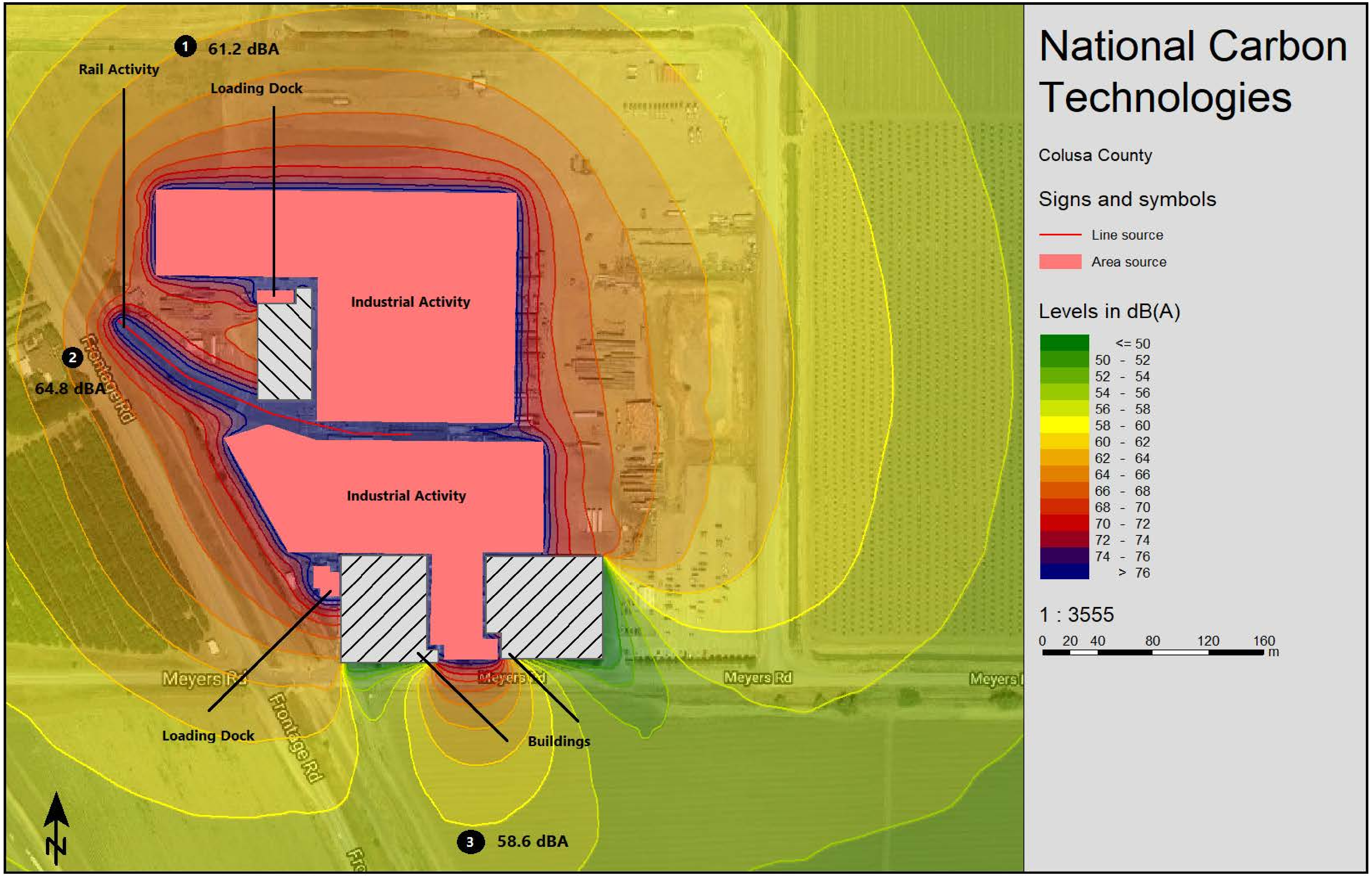
Site Location	Location	Modeled Operational Noise Attributed to the Project (L_{eq} dBA)	County Noise Standard for High Noise Traffic Corridor (dBA L_{eq})
1	Northern Project Property Line	61.2 dBA	*65 dBA*
2	**Nearest Sensitive Receptor** – Residence to the West of the Project, Across Frontage Road	**64.8 dBA**	*65 dBA*
3	South of Project Site 400 Feet	58.6 dBA	*65 dBA*

Source: Stationary source noise levels were modeled by ECORP using SoundPLAN 3D noise model. Refer to Attachment D for noise modeling assumptions and results.

As shown in Table 5-4, Project noise generated onsite would propagate to 64.8 dBA at the nearest sensitive receptor and therefore, the Project would not surpass the County noise standard at this nearest sensitive receptor. It is noted that the SoundPLAN was used to model noise as a result of onsite activities on a worst-case basis. All noise producing sources on the Project site were modeled for noise as if occurring at the same time and at the highest activity level to produce noise levels at the level as those predicted.

As shown in Figure 5-1, onsite noise generated on the Project site diminishes in power as it propagates outward from the site, generally reducing to less than 60 dBA before reaching the surrounding agricultural fields and industrial land use to the north.

No roadway segment would experience an increase of noise beyond the County significance standards and no aspect of Project onsite operations would surpass the County noise standard at the nearest sensitive receptor.



Map Date: *5/12/2021*
Photo (or Base) Source: *SoundPLAN v. 5.1*

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Figure 5-1. Project Onsite Source Noise Propagation

5.3.2.2 Would the Project Result in the Generation of Excessive Groundborne Vibration or Groundborne Noise Levels?

Construction-Generated Vibration

Excessive groundborne vibration impacts result from continuously occurring vibration levels. Increases in groundborne vibration levels attributable to the Project would be primarily associated with short-term construction-related activities. Construction on the Project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

Construction-related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks. It is noted that pile drivers would not be necessary during Project construction. Vibration decreases rapidly with distance and it is acknowledged that construction activities would occur throughout the Project site and would not be concentrated at the point closest to sensitive receptors. Groundborne vibration levels associated with typical construction equipment at 25 feet distant are summarized in Table 5-5.

Table 5-5. Representative Vibration Source Levels for Construction Equipment

Equipment Type	Vdb at 25 Feet
Large Bulldozer	87
Caisson Drilling	87
Loaded Trucks	86
Hoe Ram	87
Jackhammer	79
Small Bulldozer/Tractor	58
Vibratory Roller	94

Source: FTA 2018; Caltrans 2020b

County General Plan Noise Element Action N 1-K requires that Project generated groundborne vibration during construction is calculated and evaluated against the significance criteria established by the FTA. Thus, the FTA (2018) recommended standard of 94 vibration velocity level (VdB) with respect to the prevention of structural damage for older residential buildings is used as a threshold. This is also the level at which vibrations may begin to annoy people in buildings. The nearest structures of concern to the Project site are industrial structures positioned approximately 85 feet from the northern property line.

Based on the representative vibration levels presented for various construction equipment types in Table 5-5 and the construction vibration assessment methodology published by the FTA (2018), it is possible to estimate the potential Project construction vibration levels. The FTA provides the following equation:

$$\text{Vdb-distance} = \text{Vdb-ref} - 30\log(D/25)$$

Table 5-6 presents the expected Project related vibration levels at a conservative distance of 85 feet.

Table 5-6. Project Construction Vibration Levels at 85 Feet							
Receiver Vdb Levels[1]					Peak Vibration	Threshold	Exceed Threshold
Large Bulldozer/ Caisson Drilling/Hoe Ram	Loaded Trucks	Jack-hammer	Small Bulldozer/ Tractor	Vibratory Roller			
71.1	70.1	63.1	42.1	78.1	**78.1**	*94*	**No**

[1]Based on the Vibration Source Levels of Construction Equipment included on Table 5-5 (FTA 2018).

As shown, groundborne vibrations attenuate rapidly from the source due to geometric spreading and material damping. Geometric spreading occurs because the energy is radiated from the source and spreads over an increasingly large distance while material damping is a property of the friction loss which occurs during the passage of a vibration wave. As shown in Table 5-6, vibration as a result of construction activities would not exceed 94 Vdb at the nearest structure. Thus, Project construction would not exceed the County threshold.

Operational Groundborne Vibration

The Project proposes to revitalize and use the existing rail spur on the Project site to ship products on the industrial railway that already operates along the western boundary of the site. Freight trains are a source of groundborne vibration. Passing freight train create vibration events that last approximately two minutes; however, the rail spur would be the only new source of vibration and the movement of rail cars on the spur would be considerably slower than a passing freight train.

Older, historic buildings often considered fragile are the predominate source of concern from rail-related vibration (FTA 2018). However, it is extremely rare for vibration from train operations to cause substantial or even minor cosmetic building damage (FTA 2018). The closest Project structure to the proposed rail spur would be the residence directly west of the Project site, across Frontage Road, at approximately 150 feet distant. According to the FTA (2018), groundborne vibration from heavy rail is common when there is less than 50 feet between the track and building foundations.

Groundborne vibration levels associated with freight rail traveling 50 miles per hour, at 150 feet distant, are summarized in Table 5-7.

Table 5-7. Representative Vibration Source Levels for Freight Rail at 170 Feet	
Equipment	**Receiver Vdb Levels at 150 Feet**
Locomotive-Powered Freight Rail at 50 mph	**74**

Source: FTA 2018

As shown in Table 5-7, the closest Project residential structure to the Project rail spur, positioned approximately 150 feet distant, would experience vibration levels of 74 Vdb if the Project rail cars on this spur were to travel at a rate of 50 miles per hour. This is below the FTA (2018) recommended standard of 94 VdB with respect to the prevention of structural damage for residential buildings, and it is noted that rail traffic on this spur would not travel at 50 miles per hour, and therefore the resultant Vdb would be substantially less.

The Project would not result in groundborne vibration at any offsite structure in excess of the County standard.

5.3.2.3 Would the Project Expose People Residing or Working in the Project Area to Excessive Airport Noise?

The Project site is located outside of any airport land use plan. Furthermore, the Project site is located beyond two miles from any airport or airstrip. The Colusa County Airport is the closest public airport to the Project site and is located approximately eight miles to the northeast. There are also several private airstrips in Colusa County, the nearest being a gliderport in Williams approximately four miles north of the Project site and McCabe Ranch airfield approximately six miles south of the Project site. Thus, the ambient noise environment of the Project area is not heavily influenced by aircraft noise. Implementation of the proposed Project would not affect airport operations nor result in increased exposure of people working at or visiting the Project site to aircraft noise.

5.3.2.4 Would the Project Result in Cumulatively Considerable Noise Impacts?

Cumulative Construction Noise

Construction activities associated with the proposed Project and other construction projects in the area may overlap, resulting in construction noise in the area. However, construction noise impacts primarily affect the areas immediately adjacent to the construction site. The limited construction noise for the proposed Project was determined to be less than significant following compliance with the County construction noise threshold. Cumulative development in the vicinity of the Project site could result in elevated construction noise levels at sensitive receptors in the Project area. However, each project would be required to comply with the applicable noise limitations on construction. Therefore, the Project would not contribute to cumulative impacts during construction.

Cumulative Operational Noise Impacts

Noise associated with operational activity at the proposed facility, combined with other cumulative projects, could cause local noise level increases. Noise levels associated with the proposed Project and related cumulative projects together could result in higher noise levels than considered separately. As previously described, onsite noise sources associated with the proposed Project was found to not exceed County noise standards. Therefore, the Project would not contribute to cumulative impacts.

6.0 REFERENCES

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LIST OF ATTACHMENTS

Attachment A – Existing (Baseline) Noise Measurements – Project Site Vicinity

Attachment B – Roadway Construction Noise Model Outputs – Project Construction Noise

Attachment C – Federal Highway Administration Highway Noise Prediction Model

Attachment D – SoundPLAN Outputs – SoundPLAN Output Files

ATTACHMENT A

Existing (Baseline) Noise Measurements – Project Site Vicinity

Map Date: *5/14/2021*
Photo (or Base) Source: *ARCGISOnline 2021*

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Baseline Noise Measurements

Site Number: 1				
Recorded By: Rosey Worden				
Job Number: 2021-047				
Date: April 27 – 28, 2021				
Time: April 27, 10:07 a.m. – April 28, 10:07				
Location: Adjacent to Northwest Corner of the Project Site, Between Frontage Road and Railroad Corridor.				
Source of Peak Noise: Activity at Wadham Energy Company Facility; Traffic Along Frontage Road and Interstate 5				
Noise Data				
Ldn (dB)	**Leq (dB)**	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
74.1	69.4	48.0	92.4	116.0

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**LxT SE**	**0006133**	**02/24/2021**	
	Microphone	**Larson Davis**	**377B02**	**315201**	**02/24/2021**	
	Preamp	**Larson Davis**	**PRMLxT1L**	**069947**	**02/24/2021**	
	Calibrator	**Larson Davis**	**CAL200**	**17325**	**02/25/2021**	

Weather Data			
Est.	**Duration**: 24 Hours	**Sky:** Clear	
	Note: dBA Offset = 0.1	**Sensor Height (ft):** 4	
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	5 – 7 mph	84 high / 58 low	30.15

Photo of Measurement Location

Appendix "J"

Measurement Report

Report Summary

Meter's File Name	LxT_Data.055.s	Computer's File Name	LxT_0006133-20210427 100728-LxT_Data.055.ldbin
Meter	LxT1 0006133		
Firmware	2.404		
User		Location	
Job Description			
Note			

Start Time	2021-04-27 10:07:28	Duration	24:00:00.0		
End Time	2021-04-28 10:07:28	Run Time	24:00:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	69.4 dB		
LAE	118.8 dB	SEA	--- dB
EA	83.3 mPa²h		
EA8	27.8 mPa²h		
EA40	138.9 mPa²h		
LZS_{peak}	116.0 dB	2021-04-28 06:55:55	
LAS_{max}	92.4 dB	2021-04-28 06:55:55	
LAS_{min}	48.0 dB	2021-04-28 01:54:14	
LA_{eq}	69.4 dB		
LC_{eq}	74.6 dB	LC_{eq} - LA_{eq}	5.2 dB
LAI_{eq}	73.1 dB	LAI_{eq} - LA_{eq}	3.7 dB

Exceedances

Exceedances	Count	Duration
LAS > 85.0 dB	222	0:06:26.3
LAS > 115.0 dB	0	0:00:00.0
LZSpeak > 135.0 dB	0	0:00:00.0
LZSpeak > 137.0 dB	0	0:00:00.0
LZSpeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
74.1 dB	70.3 dB	0.0 dB	
LDEN	**LDay**	**LEve**	**LNight**
74.4 dB	70.9 dB	67.3 dB	67.1 dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	69.4 dB		--- dB		--- dB	
$Ls_{(max)}$	92.4 dB	2021-04-28 06:55:55	--- dB		--- dB	
$LS_{(min)}$	48.0 dB	2021-04-28 01:54:14	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		116.0 dB	2021-04-28 06:55:55

Overloads

Count	Duration
0	0:00:00.0

Statistics

LAS 5.0	76.5 dB
LAS 10.0	68.9 dB
LAS 33.3	60.3 dB
LAS 50.0	58.7 dB
LAS 66.6	57.2 dB
LAS 90.0	54.7 dB

Site Number: 2			
Recorded By: Collin Crawford-Martin			
Job Number: 2021-047			
Date: April 28, 2021			
Time: 11:44 am – 11:59 am			
Location: Myers Road, Approximately 0.5 mile east of the Project site.			
Source of Peak Noise: Agricultural Operations; Birds			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
54.6	39.9	78.0	93.2

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**LxT SE**	**0006133**	**02/24/2021**	
	Microphone	**Larson Davis**	**377B02**	**315201**	**02/24/2021**	
	Preamp	**Larson Davis**	**PRMLxT1L**	**069947**	**02/24/2021**	
	Calibrator	**Larson Davis**	**CAL200**	**17325**	**02/25/2021**	
Weather Data						
Est.	**Duration:** 15 Minutes		**Sky:** Clear			
	Note: dBA Offset = 0.1		**Sensor Height (ft):** 4			
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**			
	5 – 7 mph	79	30.17			

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.056.s	Computer's File Name	LxT_0006133-20210428 114403-LxT_Data.056.ldbin
Meter	LxT1 0006133		
Firmware	2.404		
User		Location	
Job Description			
Note			

Start Time	2021-04-28 11:44:03	Duration	0:15:00.0		
End Time	2021-04-28 11:59:03	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	54.6 dB		
LAE	84.1 dB	SEA	--- dB
EA	28.6 μPa²h		
EA8	914.3 μPa²h		
EA40	4.6 mPa²h		
LZS_{peak}	93.2 dB	2021-04-28 11:48:33	
LAS_{max}	78.0 dB	2021-04-28 11:48:34	
LAS_{min}	39.9 dB	2021-04-28 11:47:02	
LA_{eq}	54.6 dB		
LC_{eq}	62.5 dB	LC_{eq} - LA_{eq}	7.9 dB
LAI_{eq}	58.1 dB	LAI_{eq} - LA_{eq}	3.5 dB

Exceedances

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZSpeak > 135.0 dB	0	0:00:00.0
LZSpeak > 137.0 dB	0	0:00:00.0
LZSpeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
54.6 dB	54.6 dB	0.0 dB	
LDEN	**LDay**	**LEve**	**LNight**
54.6 dB	54.6 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	54.6 dB		--- dB		--- dB	
$Ls_{(max)}$	78.0 dB	2021-04-28 11:48:34	--- dB		--- dB	
$LS_{(min)}$	39.9 dB	2021-04-28 11:47:02	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		93.2 dB	2021-04-28 11:48:33

Overloads

Count	Duration
0	0:00:00.0

Statistics

LAS 5.0	54.8 dB
LAS 10.0	50.5 dB
LAS 33.3	46.0 dB
LAS 50.0	44.5 dB
LAS 66.6	43.2 dB
LAS 90.0	41.8 dB

Site Number: 3			
Recorded By: Collin Crawford-Martin			
Job Number: 2021-047			
Date: April 28, 2021			
Time: 12:08 pm – 12:23 am			
Location: Myers Road, Approximately 0.3 mile west of Lone Star Road.			
Source of Peak Noise: Traffic on Myers Road, Irrigation, and Birds			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
60.3	34.0	81.5	100.2

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**LxT SE**	**0006133**	**02/24/2021**	
	Microphone	**Larson Davis**	**377B02**	**315201**	**02/24/2021**	
	Preamp	**Larson Davis**	**PRMLxT1L**	**069947**	**02/24/2021**	
	Calibrator	**Larson Davis**	**CAL200**	**17325**	**02/25/2021**	

Weather Data			
Est.	**Duration:** 15 Minutes		**Sky:** Clear
	Note: dBA Offset = 0.1		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	3 – 5 mph	81	30.16

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.058.s	Computer's File Name	LxT_0006133-20210428 120843-LxT_Data.058.ldbin
Meter	LxT1 0006133		
Firmware	2.404		
User		Location	
Job Description			
Note			

Start Time	2021-04-28 12:08:43	Duration	0:15:00.0		
End Time	2021-04-28 12:23:43	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	60.3 dB		
LAE	89.9 dB	SEA	--- dB
EA	107.9 µPa²h		
EA8	3.5 mPa²h		
EA40	17.3 mPa²h		
LZS_{peak}	100.2 dB	2021-04-28 12:10:13	
LAS_{max}	81.5 dB	2021-04-28 12:15:31	
LAS_{min}	34.0 dB	2021-04-28 12:19:49	
LA_{eq}	60.3 dB		
LC_{eq}	66.7 dB	LC_{eq} - LA_{eq}	6.4 dB
LAI_{eq}	62.7 dB	LAI_{eq} - LA_{eq}	2.3 dB

Exceedances

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZSpeak > 135.0 dB	0	0:00:00.0
LZSpeak > 137.0 dB	0	0:00:00.0
LZSpeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
60.3 dB	60.3 dB	0.0 dB	
LDEN	**LDay**	**LEve**	**LNight**
60.3 dB	60.3 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	60.3 dB		--- dB		--- dB	
$Ls_{(max)}$	81.5 dB	2021-04-28 12:15:31	--- dB		--- dB	
$LS_{(min)}$	34.0 dB	2021-04-28 12:19:49	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		100.2 dB	2021-04-28 12:10:13

Overloads

Count	Duration
0	0:00:00.0

Statistics

LAS 5.0	56.0 dB
LAS 10.0	47.0 dB
LAS 33.3	41.0 dB
LAS 50.0	39.6 dB
LAS 66.6	38.5 dB
LAS 90.0	36.5 dB

Site Number: 4			
Recorded By: Collin Crawford-Martin			
Job Number: 2021-047			
Date: April 28			
Time: 12:38 pm – 12:53 pm			
Location: Ware Road, Approximately 0.4 mile east of the Interstate 5.			
Source of Peak Noise: Traffic on Ware Road, Agricultural Operations; Birds			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
43.7	36.9	53.0	95.9

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**LxT SE**	**0006133**	**02/24/2021**	
	Microphone	**Larson Davis**	**377B02**	**315201**	**02/24/2021**	
	Preamp	**Larson Davis**	**PRMLxT1L**	**069947**	**02/24/2021**	
	Calibrator	**Larson Davis**	**CAL200**	**17325**	**02/25/2021**	

Weather Data			
Est.	**Duration:** 15 Minutes	**Sky:** Clear	
	Note: dBA Offset = 0.1	**Sensor Height (ft):** 4	
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	6 – 7 mph	81	30.15

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.059.s	Computer's File Name	LxT_0006133-20210428 123847-LxT_Data.059.ldbin
Meter	LxT1 0006133		
Firmware	2.404		
User		Location	
Job Description			
Note			

Start Time	2021-04-28 12:38:47	Duration	0:15:00.0		
End Time	2021-04-28 12:53:47	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	43.7 dB		
LAE	73.2 dB	SEA	--- dB
EA	2.3 µPa²h		
EA8	74.4 µPa²h		
EA40	372.2 µPa²h		
LZS_{peak}	95.9 dB	2021-04-28 12:38:48	
LAS_{max}	53.0 dB	2021-04-28 12:49:38	
LAS_{min}	36.9 dB	2021-04-28 12:44:32	
LA_{eq}	43.7 dB		
LC_{eq}	59.0 dB	LC_{eq} - LA_{eq}	15.3 dB
LAI_{eq}	49.1 dB	LAI_{eq} - LA_{eq}	5.4 dB

Exceedances

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZSpeak > 135.0 dB	0	0:00:00.0
LZSpeak > 137.0 dB	0	0:00:00.0
LZSpeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
43.7 dB	43.7 dB	0.0 dB	
LDEN	**LDay**	**LEve**	**LNight**
43.7 dB	43.7 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	43.7 dB		--- dB		--- dB	
$Ls_{(max)}$	53.0 dB	2021-04-28 12:49:38	--- dB		--- dB	
$LS_{(min)}$	36.9 dB	2021-04-28 12:44:32	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		95.9 dB	2021-04-28 12:38:48

Overloads

Count	Duration
0	0:00:00.0

Statistics

LAS 5.0	48.2 dB
LAS 10.0	46.6 dB
LAS 33.3	43.9 dB
LAS 50.0	42.6 dB
LAS 66.6	40.1 dB
LAS 90.0	38.6 dB

Site Number: 5			
Recorded By: Collin Crawford-Martin			
Job Number: 2021-047			
Date: April 30, 2021			
Time: 11:47 am – 12:02 pm			
Location: Lone Star Road, Approximately 0.4 mile south of Ware Road.			
Source of Peak Noise: Traffic on Lone Star Road, Agricultural Operations; Sirens			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
72.3	38.2	88.5	112.2

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**LxT SE**	**0006133**	**02/24/2021**	
	Microphone	**Larson Davis**	**377B02**	**315201**	**02/24/2021**	
	Preamp	**Larson Davis**	**PRMLxT1L**	**069947**	**02/24/2021**	
	Calibrator	**Larson Davis**	**CAL200**	**17325**	**02/25/2021**	

Weather Data			
Est.	**Duration:** 15 Minutes		**Sky:** Clear
	Note: dBA Offset = 0.0		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	3 – 5 mph	81	30.14

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.065.s	Computer's File Name	LxT_0006133-20210430 114757-LxT_Data.065.ldbin
Meter	LxT1 0006133		
Firmware	2.404		
User		Location	
Job Description			
Note			

Start Time	2021-04-30 11:47:57	Duration	0:15:00.0		
End Time	2021-04-30 12:02:57	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	72.3 dB		
LAE	101.8 dB	SEA	--- dB
EA	1.7 mPa²h		
EA8	54.4 mPa²h		
EA40	271.9 mPa²h		
LZS_{peak}	112.2 dB	2021-04-30 12:02:01	
LAS_{max}	88.5 dB	2021-04-30 11:52:28	
LAS_{min}	38.3 dB	2021-04-30 12:01:22	
LA_{eq}	72.3 dB		
LC_{eq}	77.0 dB	LC_{eq} - LA_{eq}	4.7 dB
LAI_{eq}	75.8 dB	LAI_{eq} - LA_{eq}	3.5 dB

Exceedances	Count	Duration
LAS > 85.0 dB	5	0:00:08.2
LAS > 115.0 dB	0	0:00:00.0
LZSpeak > 135.0 dB	0	0:00:00.0
LZSpeak > 137.0 dB	0	0:00:00.0
LZSpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	72.3 dB	72.3 dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	72.3 dB	72.3 dB	--- dB	--- dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	72.3 dB		--- dB		--- dB	
$Ls_{(max)}$	88.5 dB	2021-04-30 11:52:28	--- dB		--- dB	
$LS_{(min)}$	38.3 dB	2021-04-30 12:01:22	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		112.2 dB	2021-04-30 12:02:01

Overloads	Count	Duration
	0	0:00:00.0

Statistics

LAS 5.0	79.9 dB
LAS 10.0	76.8 dB
LAS 33.3	63.0 dB
LAS 50.0	54.4 dB
LAS 66.6	47.5 dB
LAS 90.0	42.5 dB

Site Number: 6			
Recorded By: Collin Crawford-Martin			
Job Number: 2021-047			
Date: April 30, 2021			
Time: 11:22 am – 11:37 am			
Location: Intersection of Myers Road and Zumwalt Road.			
Source of Peak Noise: Vehicle Traffic; Agricultural Operations			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
56.7	31.7	72.4	91.7

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Larson Davis**	**LxT SE**	**0006133**	**02/24/2021**	
	Microphone	**Larson Davis**	**377B02**	**315201**	**02/24/2021**	
	Preamp	**Larson Davis**	**PRMLxT1L**	**069947**	**02/24/2021**	
	Calibrator	**Larson Davis**	**CAL200**	**17325**	**02/25/2021**	

Weather Data			
Est.	**Duration:** 15 Minutes		**Sky:** Clear
	Note: dBA Offset = 0.0		**Sensor Height (ft):** 4
	Wind Ave Speed (mph)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (hPa)**
	3 – 5 mph	80	30.15

Photo of Measurement Location

Measurement Report

Report Summary

Meter's File Name	LxT_Data.064.s	Computer's File Name	LxT_0006133-20210430 112206-LxT_Data.064.ldbin
Meter	LxT1 0006133		
Firmware	2.404		
User		Location	
Job Description			
Note			

Start Time	2021-04-30 11:22:06	Duration	0:15:00.0		
End Time	2021-04-30 11:37:06	Run Time	0:15:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	56.7 dB		
LAE	86.2 dB	SEA	--- dB
EA	46.4 µPa²h		
EA8	1.5 mPa²h		
EA40	7.4 mPa²h		
LZS_{peak}	91.7 dB	2021-04-30 11:25:14	
LAS_{max}	72.4 dB	2021-04-30 11:23:47	
LAS_{min}	31.4 dB	2021-04-30 11:32:50	
LA_{eq}	56.7 dB		
LC_{eq}	64.2 dB	LC_{eq} - LA_{eq}	7.5 dB
LAI_{eq}	58.6 dB	LAI_{eq} - LA_{eq}	1.9 dB

Exceedances

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LZSpeak > 135.0 dB	0	0:00:00.0
LZSpeak > 137.0 dB	0	0:00:00.0
LZSpeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
56.7 dB	56.7 dB	0.0 dB	
LDEN	**LDay**	**LEve**	**LNight**
56.7 dB	56.7 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	56.7 dB		--- dB		--- dB	
$Ls_{(max)}$	72.4 dB	2021-04-30 11:23:47	--- dB		--- dB	
$LS_{(min)}$	31.4 dB	2021-04-30 11:32:50	--- dB		--- dB	
$L_{Peak(max)}$	--- dB		--- dB		91.7 dB	2021-04-30 11:25:14

Overloads

Count	Duration
0	0:00:00.0

Statistics

LAS 5.0	65.0 dB
LAS 10.0	59.9 dB
LAS 33.3	46.3 dB
LAS 50.0	42.9 dB
LAS 66.6	40.1 dB
LAS 90.0	34.9 dB

TRAFFIC NOISE LEVELS

Project Number: 2020-047
Project Name: **National Carbon Technologies Williams Facility**

Background Information

Model Description:	FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Analysis Scenario(s):	**Existing Conditions on Interstate 5**
Source of Traffic Volumes:	Caltrans Traffic Census Program, 2020. https://dot.ca.gov/programs/traffic-operations/census
Community Noise Descriptor:	L_{dn}: x CNEL:

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Traffic Noise Levels

Analysis Condition / Roadway Segment	Land Use	Lanes	Median Width	Peak Hour Volume	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor[1]	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	Peak Hour dB(A) L_{eq}	24-Hour dB(A) Ldn	Traffic Volumes 24-Hour Day	Eve	Night
Interstate 5 - Between Hahn & Husted	Residential & Agricultural	4	65	3,400	32,800	80	100	0.5	0	1.8%	0.7%	76.6	75.3	25,486	4,166	3,149

[1] Distance is from the centerline of the roadway segment to the receptor location.

ATTACHMENT B

Roadway Construction Noise Model Outputs – Project Construction Noise

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 5/10/2021
Case Description: National Carbon Technologies Williams Facility **Onsite** Construction #1

Description	**Affected Land Use**
Onsite Construction	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**	**Estimated Shielding (dBA)**
Pickup Truck	No	40		75	580	0
All Other Equipment > 5 HP	No	50	85		580	0
Compressor (air)	No	40		77.7	580	0
Dump Truck	No	40		76.5	580	0
Flat Bed Truck	No	40		74.3	580	0
Flat Bed Truck	No	40		74.3	580	0
Flat Bed Truck	No	40		74.3	580	0
Flat Bed Truck	No	40		74.3	580	0
Flat Bed Truck	No	40		74.3	580	0
Man Lift	No	20		74.7	580	0
Man Lift	No	20		74.7	580	0
Man Lift	No	20		74.7	580	0
Man Lift	No	20		74.7	580	0
Man Lift	No	20		74.7	580	0
Crane	No	16		80.6	580	0
Crane	No	16		80.6	580	0
Front End Loader	No	40		79.1	580	0
Tractor	No	40	84		580	0
Tractor	No	40	84		580	0
Backhoe	No	40		77.6	580	0

Results

Calculated (dBA)

Equipment	***Lmax**	**Leq**
Pickup Truck	53.7	49.7
All Other Equipment > 5 HP	63.7	60.7
Compressor (air)	56.4	52.4
Dump Truck	55.2	51.2
Flat Bed Truck	53	49
Flat Bed Truck	53	49
Flat Bed Truck	53	49
Flat Bed Truck	53	49
Flat Bed Truck	53	49
Man Lift	53.4	46.4
Man Lift	53.4	46.4
Man Lift	53.4	46.4
Man Lift	53.4	46.4
Man Lift	53.4	46.4
Crane	59.3	51.3
Crane	59.3	51.3
Front End Loader	57.8	53.8
Tractor	62.7	58.7
Tractor	62.7	58.7
Backhoe	56.3	52.3
Total	**63.7**	**66.4**

*Calculated Lmax is the Loudest value.

Report date: 5/10/2021
Case Description: National Carbon Technologies Williams Facility **Onsite** Construction #2

Description	**Affected Land Use**
Onsite Construction	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**	**Estimated Shielding (dBA)**
Backhoe	No	40		77.6	580	0
Excavator	No	40		80.7	580	0
Excavator	No	40		80.7	580	0
Excavator	No	40		80.7	580	0
Excavator	No	40		80.7	580	0
Excavator	No	40		80.7	580	0
Excavator	No	40		80.7	580	0
Excavator	No	40		80.7	580	0
Front End Loader	No	40		79.1	580	0
Front End Loader	No	40		79.1	580	0
Front End Loader	No	40		79.1	580	0
Dozer	No	40		81.7	580	0
Scraper	No	40		83.6	580	0
Man Lift	No	20		74.7	580	0
All Other Equipment > 5 HP	No	50	85		580	0
Vacuum Street Sweeper	No	10		81.6	580	0
Paver	No	50		77.2	580	0
Front End Loader	No	40		79.1	580	0

Results

Equipment	Calculated (dBA) *Lmax	Leq
Backhoe	56.3	52.3
Excavator	59.4	55.4
Excavator	59.4	55.4
Excavator	59.4	55.4
Excavator	59.4	55.4
Excavator	59.4	55.4
Excavator	59.4	55.4
Excavator	59.4	55.4
Front End Loader	57.8	53.8
Front End Loader	57.8	53.8
Front End Loader	57.8	53.8
Dozer	60.4	56.4
Scraper	62.3	58.3
Man Lift	53.4	46.4
All Other Equipment > 5 HP	63.7	60.7
Vacuum Street Sweeper	60.3	50.3
Paver	55.9	52.9
Front End Loader	57.8	53.8
Total	**63.7**	**67.9**

*Calculated Lmax is the Loudest value.

Construction noise calculations require two distinct modelling scenarios to account for all of the Project equipment. The calculated Leq value of 66.4 dBA is combined with the calculated Leq value of 67.9. When combining noise levels that differ by 1.5 dBA [67.9 - 66.4 = 1.5], the addition of 2.5 dBA is applied to the higher noise level, resulting in an overall construction noise level of **70.4 dBA** at the Project boundary when all construction equipment is operating simultaneously. [67.9 + 2.5 = 70.4].

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 5/10/2021
Case Description: National Carbon Technologies - **Offsite** Construction

Description	**Land Use**
High Voltage Line Stringing	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**	**Estimated Shielding (dBA)**
Pickup Truck	No	40		75	50	0
Man Lift	No	20		74.7	50	0
Man Lift	No	20		74.7	50	0
Compressor (air)	No	40		77.7	50	0
All Other Equipment > 5 HP	No	50	85		50	0
All Other Equipment > 5 HP	No	50	85		50	0

Results

Calculated (dBA)

Equipment	***Lmax**	**Leq**
Pickup Truck	75	71
Man Lift	74.7	67.7
Man Lift	74.7	67.7
Compressor (air)	77.7	73.7
All Other Equipment > 5 HP	85	82
All Other Equipment > 5 HP	85	82
Total	**85**	**85.6**

*Calculated Lmax is the Loudest value.

ATTACHMENT C

Federal Highway Administration Highway Noise Prediction Model

TRAFFIC NOISE LEVELS

Project Number: 2020-047
Project Name: National Carbon Technologies Williams Facility

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Analysis Scenario(s): **Existing Conditions**
Source of Traffic Volumes: *Interstate 5 Traffic from Caltrans Traffic Census Program, 2020. https://dot.ca.gov/programs/traffic-operations/census*
Myers Road derived from Colusa County General Plan EIR (2011) [1]
Community Noise Descriptor: L_{dn}: x CNEL: ____

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Traffic Noise Levels

Analysis Condition / Roadway Segment	Land Use	Lanes	Median Width	Peak Hour Volume	ADT Volume	Design Speed (mph)	Dist. from Center to Receptor[2]	Alpha Factor	Barrier Attn. dB(A)	Vehicle Mix: Medium Trucks	Vehicle Mix: Heavy Trucks	Peak Hour dB(A) L_{eq}	24-Hour dB(A) Ldn	Traffic Volumes 24-Hour: Day	Eve	Night
Interstate 5																
Between Hahn & Husted	Residential & Agricultural	4	65	3,400	32,800	80	100	0.5	0	1.8%	0.7%	76.6	75.3	25,486	4,166	3,149
Myers Road																
West of Frontage Road	Residential & Agricultural	2	0	110	989	55	100	0.5	0	1.8%	0.7%	56.4	54.7	768	126	95
East of Frontage Road	Residential & Agricultural	2	0	227	2,041	55	100	0.5	0	1.8%	0.7%	59.5	57.9	1,586	259	196

[1] Existing trips on Myers Road, west of Frontage Road, is based on the trip identified for Zumwalt Road between Myers Road and Walnut Drive.
Existing trips on Myers Road, east of Frontage Road, are based on the trips identified for Lone Star Road between Myers Road and Abel Road.
[2] Distance is from the centerline of the roadway segment to the receptor location.

TRAFFIC NOISE LEVELS

Project Number: 2020-047
Project Name: **National Carbon Technologies Williams Facility**

Background Information

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Analysis Scenario(s): **Existing + Project Conditions**
Source of Traffic Volumes: *125 Heavy-Duty Truck Trips Calculated Based on the Total Throughput Capacity of the Proposed Facility*
200 Employee Traffic Trips Calculated Based on the Maximum Daily Employees of 50
Community Noise Descriptor: L_{dn}: x CNEL: ____

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

Traffic Noise Levels

Analysis Condition Roadway Segment	**Land Use**	**Lanes**	**Median Width**	**Peak Hour Volume**	**ADT Volume**	**Design Speed (mph)**	**Dist. from Center to Receptor**[1]	**Alpha Factor**	**Barrier Attn. dB(A)**	**Vehicle Mix Medium Trucks**	**Vehicle Mix Heavy Trucks**	**Peak Hour dB(A) L_{eq}**	**24-Hour dB(A) Ldn**	Traffic Volumes 24-Hour Day	Eve	Night
Interstate 5																
Between Hahn & Husted	Residential & Agricultural	4	65	3,673	33,060	80	100	0.5	0	1.8%	0.9%	77.0	75.4	25,688	4,199	3,174
Frontage Road																
Between Myers & Husted	Residential Industrial & Agricultural	2	0	29	260	55	100	0.5	0	1.8%	38.4%	57.1	55.6	202	33	25
Myers Road																
West of Frontage Road	Residential & Agricultural	2	0	114	1,022	55	100	0.5	0	1.8%	1.9%	57.0	55.4	794	130	98
East of Frontage Road	Residential & Agricultural	2	0	230	2,074	55	100	0.5	0	1.8%	1.3%	59.8	58.2	1,611	263	199

[1] *Distance is from the centerline of the roadway segment to the receptor location.*

[2] *The measured ambient noise level at Frontage Road equals 74.1 dBA Ldn. The calculated Project traffic on this roadway segment equals 55.6 dBA Ldn.*
When combining noise levels that differ by more than 10 dBA [74.1 and 55.6], the lower noise value does not contribute to the total noise level. [74.1 dBA + 55.6 dBA = 74.1 dBA]

ATTACHMENT D

SoundPLAN Outputs – SoundPLAN Output Files

SoundPLAN
Output Source Information

Appendix "J"

Number	Reciever Name	Floor	Level at Receiver
1	North of the Project site	Ground Floor	61.2 dBA
2	Residence located west of the Project site adjacent to Frontage Road	Ground Floor	64.8 dBA
3	South of the Project site	Ground Floor	58.6 dBA

Number	Noise Source Information	Citation	Level at Source
1	Truck Loading Dock	City of San Jose 2014 Midpoint at 237 Loading Dock Noise Study	79.0 dBA
2	Industrial Shipping Yard	SoundPLAN 5.1 Reference Library	65.7 dBA
3	Rail Spur at 20 miles Per Hour	Metropolitan Council. Southwest Green Line Noise Fact Sheet. 2015.	88.0 dBA