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CalCapture CCS Project

Noise Study



Prepared for:
Carbon TerraVault Holdings, LLC, a carbon
management subsidiary of California Resources
Corporation

October 2025

Project/File:
185806775

Prepared by:
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Revision Schedule

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date

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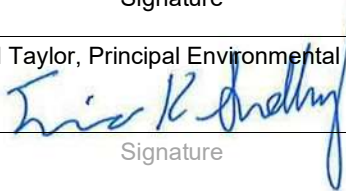
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Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
CalGEM	California Geologic Energy Management Division
CARB	California Air Resources Board
CCR	California Code of Regulations
CCS	Carbon Capture and Sequestration
CCU	Carbon Capture Unit
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CO ₂	carbon dioxide
CRC	California Resources Corporation
CTV	Carbon TerraVault Holdings, LLC
CTV I	CRC's Carbon TerraVault I
CUP	Conditional Use Permit
dB	decibel
dB(A)	decibel A-weighted
EFG+	Econamine FG Plus
EHOF	Elk Hills Oilfield
EHPP	Elk Hills Power Plant
EIR	Environmental Impact Report
FHWA	Federal Highway Administration
GT	gas turbine
HDD	horizontal directional drilling
HRSG	heat recovery steam generator
ISO	International Organization for Standardization
Kern County	Kern County Planning and Natural Resources Department
kV	kilovolt
L90	background noise level
Ldn	day-night noise level
Leq	average noise level
Lmax	maximum noise level
MDB&M	Mount Diablo Base and Meridian
MM	mitigation measure
MMTPY	million metric tons per year
MTPD	metric tons per day
MWe	megawatt equivalent
NOD	Notice of Determination
OSHA	Occupational Safety and Health Administration
PPV	Peak Particle Velocity
Project	CalCapture Carbon Capture and Sequestration Project
RCNM	Roadway Construction Noise Model
RO	reverse osmosis
ST	steam turbine



CalCapture CCS Project – Noise Study

Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
Stantec	Stantec Consulting Services Inc.
UIC	Underground Injection Control
U.S. EPA	U.S. Environmental Protection Agency



1 Introduction

On behalf of Carbon TerraVault Holdings, LLC (CTV), a carbon management subsidiary of California Resources Corporation (CRC), Stantec Consulting Services Inc. (Stantec) has performed a noise study for the construction and operation of the proposed CalCapture Carbon Capture and Sequestration (CCS) Project (Project), located in the Elk Hills Oilfield (EHOF) near Tupman, Kern County, California (Project site). CRC is seeking approval of a Petition for Post-Certification Amendment from the California Energy Commission serving as the lead agency. The purpose of this analysis is to determine the amount of noise generated by the Project during construction and operation and to support the analysis of noise impacts of the Project consistent with the California Environmental Quality Act (CEQA). The Regional Location and Project Location are shown in Figures 1 and 2.

1.1 Project Description

The proposed Project would capture carbon dioxide (CO₂) generated as a by-product by CRC's 550-megawatt-equivalent (MWe) Elk Hills Power Plant (EHPP), located in the EHOF near Tupman, Kern County, California. The EHPP was commissioned in 2003 and is powered by two General Electric 7FA gas turbines (GTs), with two heat recovery steam generators (HRSGs) providing steam to a General Electric D11 steam turbine (ST). The Carbon Capture Unit (CCU), not including pipelines or temporary staging and parking areas, would be located immediately south of the EHPP in a 7.64-acre existing disturbed area.

Implementation of the Project would require approval of a Petition for Modification Application from the California Energy Commission (CEC), who has the exclusive authority for licensing thermal power plants of 50 MW or larger, as well as related transmission lines, fuel supply lines, and other facilities.

The CCU would utilize Fluor's Econamine FG PlusSM (EFG+) process to capture and concentrate the CO₂. The EFG+ process is designed to capture 95 percent of the CO₂ from the total flue gas feed to the unit. The EFG+ CCU can be divided into seven primary subsystems or sections: Flue Gas Cooling, CO₂ Absorption, Solvent Regeneration, Solvent Maintenance, Chemical Storage and Supply, CO₂ Compression, and Utility Support Systems. The treated flue gas is vented to the atmosphere directly from the EFG+ CCU plant absorber. The concentrated CO₂ would then be compressed, dehydrated, and stripped of oxygen prior to conveyance to the permitted manifold pad, permitted as part of the approved Carbon TerraVault I (CTV I) project (State Clearinghouse No. 2022030180), which will direct the CO₂ to the U.S. Environmental Protection Agency (U.S. EPA) approved Class VI Underground Injection Control (UIC) wells to be injected into a depleted oil and gas reservoir located on the CRC property and approved as part of the CTV I project. The previously approved CTV I manifold pad, injection wells, depleted oil and gas reservoir and related facilities further discussed in Section 1.2 below are not part of the CalCapture CCS Project analyzed in this report.

A new, approximately 0.5-mile, 8- to 10-inch pipeline, installed primarily below ground utilizing either trenching or horizontal directional drilling (HDD) techniques, would transport the CO₂ from the CCU to the tie-in with the Carbon TerraVault I (CTV I) permitted 35R manifold facility (pad). It is anticipated that the



CalCapture CCS Project – Noise Study

1 Introduction

proposed Project would capture approximately 4,400 metric tons of CO₂ per day (MTPD) (1.6 million metric tons of CO₂ per year [MMTPY]). The proposed Project is estimated to be in operation for up to 26 years.¹

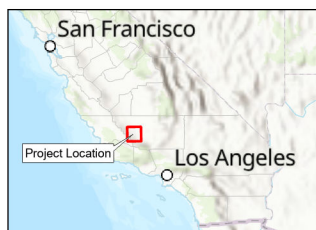
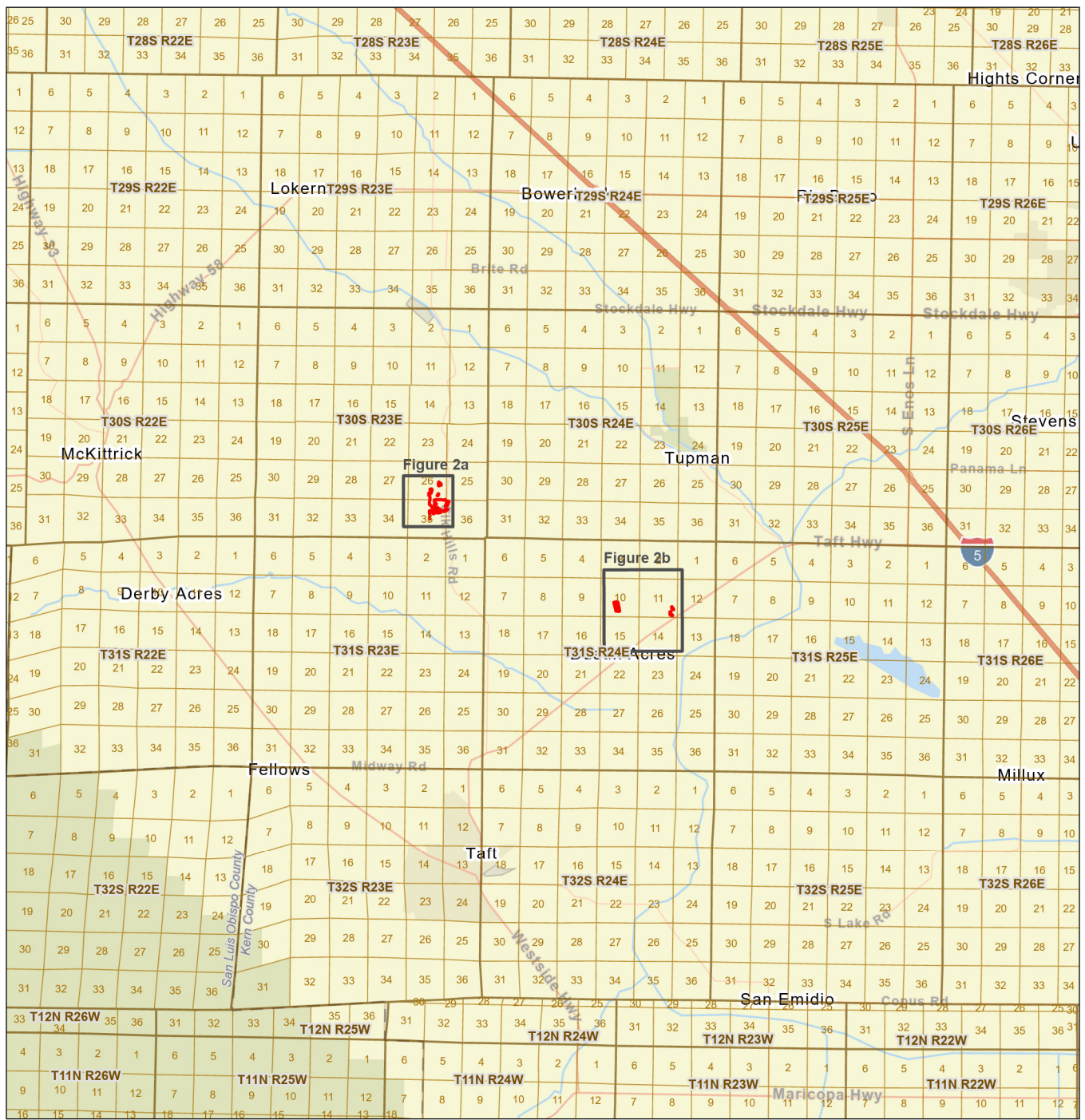
Water use during operation of the CalCapture CCU would be minimized by the inclusion of a hybrid cooling system (Wet Surface Air Coolers [WSAC], air coolers, secondary glycol cooling, and water cooling). Additionally, the CCU would be equipped with a water treatment system, consisting of a reverse osmosis (RO) Unit that is designed to recover and reuse water from the Cooling Tower blowdown. The recovered water is utilized as make-up to the CO₂ absorption system and the Wash Water WSAC Basin. A wastewater stream (less than 10 gallons per minute) would be collected at the CalCapture CCU and transferred by a new surface pipeline to the EHPP for disposal via an existing UIC Class I injection well.

The proposed Project includes a single connection to the CRC Power System and would include a connection of a new 115-kilovolt (kV) transmission line to a new CRC electrical substation. The proposed Project would require a new transmission tie line to connect the Project switching station to the existing CRC substation. Electrical power would be supplied to the CalCapture Substation with a new dedicated electrical transformer. The new 115-kV transmission tie line is expected to be built using pre-engineered steel poles with anchor bolt foundation designs.

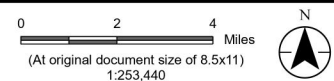
During construction, temporary offices and existing parking areas would be used by construction personnel. Temporary office and parking areas have been designated on previously disturbed areas to the south and northeast of the Project site. Two additional areas are located approximately 5.5 miles southeast of the Project site. There are no permanent new buildings proposed for the Project, and no grading would occur within the temporary office and parking areas. Total temporary staging and parking area would be approximately 30.74 acres.

¹The life of the project is dependent on the sources permitted for injection into the CTV I approved storage reservoir, the ability of the project year by year to obtain CO₂ and inject at the maximum 2,210,000 million tons per year, and the total estimated storage capacity of up to 48 million tons of CO₂.





- Project Area
- Township and Range
- Section



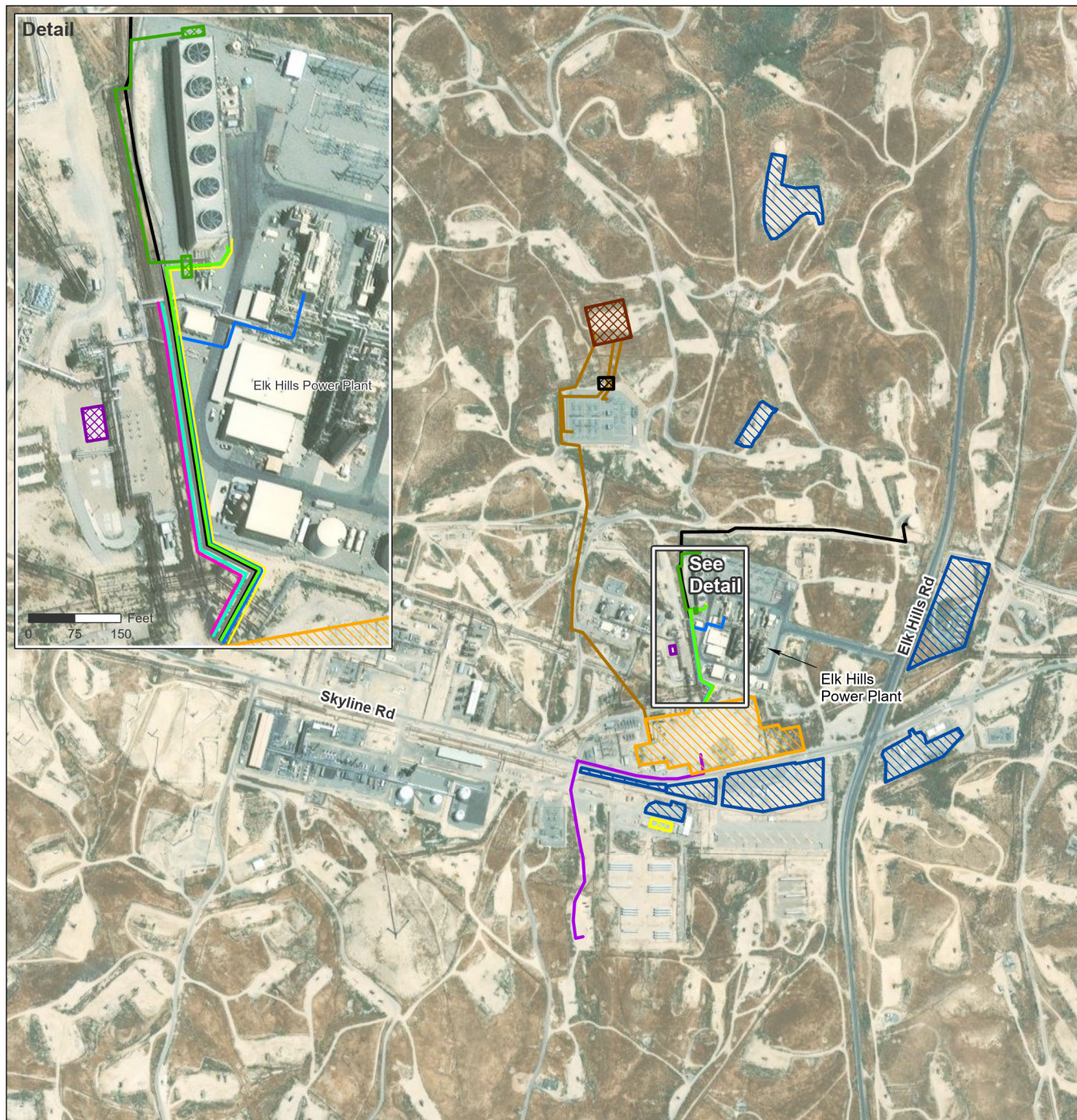
Project Location: Kern County, CA
 Prepared by MMD on 2025-06-26
 TR by CT 2025-06-26
 IR by ES on 2025-06-26
 Client/Project: 185806775

California Resources Corporation
 CalCapture Carbon Capture and Sequestration Project
 Figure No. 1

Title
 Regional Vicinity

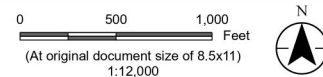
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 2. Data Sources: Stantec, USGS, 2025.
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Notes
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- | | |
|--|-----------------------------|
| Capture Facility | Electrical Lines |
| Temporary Parking, Office, and Staging Areas | CO2 Line |
| Proposed Sub Location (250 x 250) | CWR Line |
| Substation Extension Proposal | CWS Line |
| New BPSTG & Transformer | Condensate Line |
| Warehouse | HP Steam Line |
| Cooling Water Sump | LP Steam Line |
| | Raw Water Line |
| | RO Permeate Stream Pipeline |
| | CWS Line Alternative |



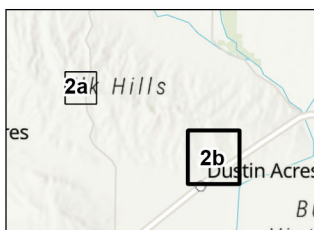
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California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Figure No.
2a
Title
Site Plan

*Entire map extent within Township 30S Range 23E.

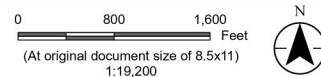
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 Temporary Parking, Office, and Staging Areas

*Entire map extent within Township 31S Range 24E.



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185806775

California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Figure No.
2b

Title
Site Plan

Notes
1. Coordinate System: NAD 1983 StatePlane
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1.2 CTV I Background Information

On December 31, 2024, the U.S. EPA issued four UIC Class VI well permits to CTV, a carbon management subsidiary of CRC.

The specific U.S. EPA permits issued for the four wells are as follows:

- R9UIC-CA6-FY22 1.1 for well 373-35R
- R9UIC-CA6-FY22 1.2 for well 345C-36R
- R9UIC-CA6-FY22 1.3 for well 353XC-35R
- R9UIC-CA6-FY22 1.4 for well 363C-27R

These four wells would be utilized to inject the CO₂ captured from the proposed Project into the Monterey Formation 26R storage reservoir located approximately 6,000 feet below the ground surface. The CTV I project area is located within the EHOF, which is a suitable area for long-term CO₂ storage and sequestration. The CTV I project was designed to implement sustainable CCS in support of California's initiative to combat climate change by reducing CO₂ levels in the atmosphere.

In addition to the Class VI Permit, CTV obtained a land use permit from the Kern County Planning and Natural Resources Department (Kern County) in 2024. Specifically, the CTV I project was approved by the Kern County Board of Supervisors on October 21, 2024, based on a final Environmental Impact Report (EIR, State Clearinghouse #2022030180) prepared by Kern County and certified by it on the same date. A Notice of Determination was filed with the Kern County Clerk on October 22, 2024. The CTV I project is subject to the terms, conditions and restrictions set forth in the Conditional Use Permits (CUP) issued by Kern County. Implementation of the CUP authorizes the construction and operation of underground CO₂ facility pipelines to support the CTV I CCS facility and related infrastructure (e.g., injection/monitoring wells, CO₂ manifold piping and metering facilities) within the 9,104-acre project site, located within the EHOF.

Four monitoring wells permitted by the California Geologic Energy Management Division (CalGEM), as part of the CUP issued by Kern County for the CTV I project would be used for CO₂ monitoring. In addition, six CTV I permitted wells would be used to monitor for seismic activity. The seismic monitoring wells will be used to detect seismic events at or above magnitude (M) 1.0 in real time as required by the California Air Resources Board (CARB) CCS Protocol under the Low Carbon Fuel Standard (LCFS) (C.4.3.2.3). Additionally, the California Integrated Seismic Network will be monitored continuously for indication of a 2.7 M or greater earthquake or greater occurring within a 1-mile radius of injection operations from commencement of injection activity to its completion.

Monitoring activities would extend beyond the injection phase of the Project pursuant to Code of Federal Regulation (CFR) Title 40 Section 146.93 until site closure is granted. Monitoring requirements during post-injection are similar to those during injection, with activities such as sampling occurring quarterly and monitoring well integrity testing at frequency per U.S. EPA requirement.

As noted above, the facilities approved as part of the CTV I project, including but not limited to the manifold, pad, injection wells, monitoring wells and related transmission lines, pipelines and other related facilities



that have already been approved by applicable agencies with jurisdiction over those facilities, including the U.S. EPA, CalGEM and Kern County, are not included as part of the proposed Project. Accordingly, such facilities are not analyzed in this report.

1.3 Project Location

The Project is located within the EHO in the southwestern edge of the San Joaquin Valley near Tupman in Kern County, California.

The Project comprises portions of six parcels owned by CRC. The Project is contained within the following sections of EHO: sections 26, 34, and 35 of Township 30 South Range 23 East and sections 10 and 11 of Township 31 South Range 24 East, Mount Diablo Base and Meridian (MDB&M), Kern County, State of California (Table 1). The proposed Project would be located on approximately 52 acres within the identified parcels.

Table 1 Project Parcel Data

Assessor's Parcel Number	Section/ Township/ Range	Acreage*
158-090-19	Section 35/ Township 30S/ Range 23E	590.61
158-090-16	Section 35/ Township 30S/ Range 23E	14.78
158-090-02	Section 26/ Township 30S/ Range 23E	640
158-090-04	Section 34/ Township 30S/ Range 23E	682.86
298-070-05	Section 11/Township 31S/Range 24E	640
298-070-06	Section 10/Township 31S/Range 24E	640

Notes:

Assessor's parcel acreages from Kern County Web Map ([Kern County GIS](#), 2025).

1.4 Noise Impact Fundamentals and Terminology

Noise is generally defined as unwanted sound that annoys or disturbs people and potentially causes an adverse psychological or physiological effect on human health. Sound is mechanical energy transmitted by pressure waves over a medium such as air or water. The sound pressure level is the most common descriptor used to characterize the loudness of a sound level.

Although the decibel (dB) scale, a logarithmic scale, is used to quantify sound intensity, it does not accurately describe how sound intensity is perceived by human hearing. The perceived loudness of sound is dependent upon many factors, including sound pressure level and frequency content. The human ear is not equally sensitive to all frequencies in the entire spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive in a process called A-weighting, written as dB(A). There is a strong correlation between A-weighted sound levels and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment.



For a point source, such as electrical equipment, sound decreases at a rate of 6 dB per doubling of distance. For a line source, such as free-flowing traffic on a roadway, sound decreases at a rate of 3 dB per doubling of distance (Caltrans 2013). Atmospheric conditions including wind, temperature and humidity can change how sound propagates over distance and can affect the level of sound received at a given location. Barriers, such as solid fences, buildings, and topography that block the line of sight between a source and a receiver, also increase the attenuation of sound over distance.

1.5 Vibration

Vibration amplitude attenuates over distance and is a complex function of how energy is imparted into the ground and the soil conditions through which the vibration is traveling. The following equation can be used to estimate the vibration level at a given distance for typical soil conditions (FTA 2018). “PPVref” is the reference inches/second Peak Particle Velocity (PPV) from Table 7.4 – Vibration Source Levels for Construction Equipment and “Distance” is the distance between the source and the receptor:

$$PPV = PPV_{ref} \times (25/Distance)^{1.5}$$

2 Regulatory Setting

2.1 Federal Regulations

Federal highway and aircraft guidelines and regulations have been established by agencies listed in Table 2 below. Federal guidelines and regulations are summarized in Table 2. These federal regulations do not apply to Project activities but may be applicable to existing activities in the Project area and also represent useful benchmarks for noise standards used by other agencies.

Table 2 Federal Guidelines and Regulations for Exterior Noise (dB(A))

Agency	Leq	DNL
Federal Energy Regulatory Commission	--	55
U.S. Department of Transportation (construction noise level at a residential land use during daytime) (a)	90	--
Federal Highway Administration	67	[67]
Federal Aviation Administration	--	65
U.S. Department of Housing and Urban Development (HUD) (b)	--	65
Sources:		
(a) FTA 2006		
(b) 24 CFR 51B; HUD 1991		



2.1.1 Occupational Safety and Health Act of 1970

On-site noise levels are regulated by the Occupational Safety and Health Administration (OSHA). This regulation protects workers from the effects of occupational noise exposure. The noise exposure level of workers is regulated at 90 dB(A) over an 8-hour work shift to protect hearing (29 CFR 1910.95). Employee exposure to levels exceeding 85 dB(A) requires that employers develop a hearing conservation program. Such programs include adequate warning, the provision of hearing protection devices, and periodic employee testing for hearing loss.

2.2 State Regulations

2.2.1 California Division of Occupational Safety and Health

The California Division of Occupational Safety and Health implements and enforces the noise exposure limits established by the federal OSHA, as described above, for the state of California. No state regulations apply to noise specifically for the proposed project; however, there are general state guidelines provided by the California Department of Health Services that define acceptable noise levels based on a land use compatibility matrix designed to protect residents and other sensitive land uses from excessive noise levels. These guidelines help to define a threshold for acceptable noise levels for residential areas in the project area. The California Department of Health Services has identified DNL or CNEL values of 60 dB(A) or less as normally acceptable outdoor levels for residential areas.

2.2.2 California Noise Control Act of 1973

Sections 46000 through 46080 of the California Health and Safety Code, known as the California Noise Control Act of 1973, declares that excessive noise is a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological and economic damage. It also identifies a continuous and increasing bombardment of noise in the urban, suburban and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention and abatement of noise. It is the policy of the state to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

2.3 County Regulations

Section 8.36 “Noise Control” in the Kern County Code of Ordinances states that it is “unlawful for any person to do, or cause to be done” several noise-producing acts within the unincorporated areas of the county, including public address systems and loud or raucous noise. The Code does not list specific noise level limits for fixed-source equipment.

The Noise Element in the Kern County General Plan lists specific Goals, Policies, and Implementation Measures to “ensure the residents of Kern County are protected from excessive noise and that moderate levels of noise are maintained.” Implementation Measure F states the following:



- F. Require proposed commercial and industrial uses or operations to be designed or arranged so that they will not subject residential or other noise sensitive land uses to exterior noise levels in excess of 65 dB Ldn and interior noise levels in excess of 45 dB Ldn.²

3 Existing Noise Environment

3.1 Sensitive Receptors

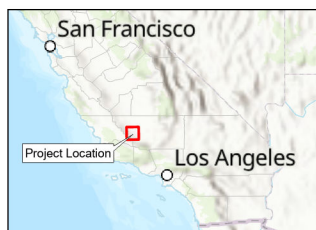
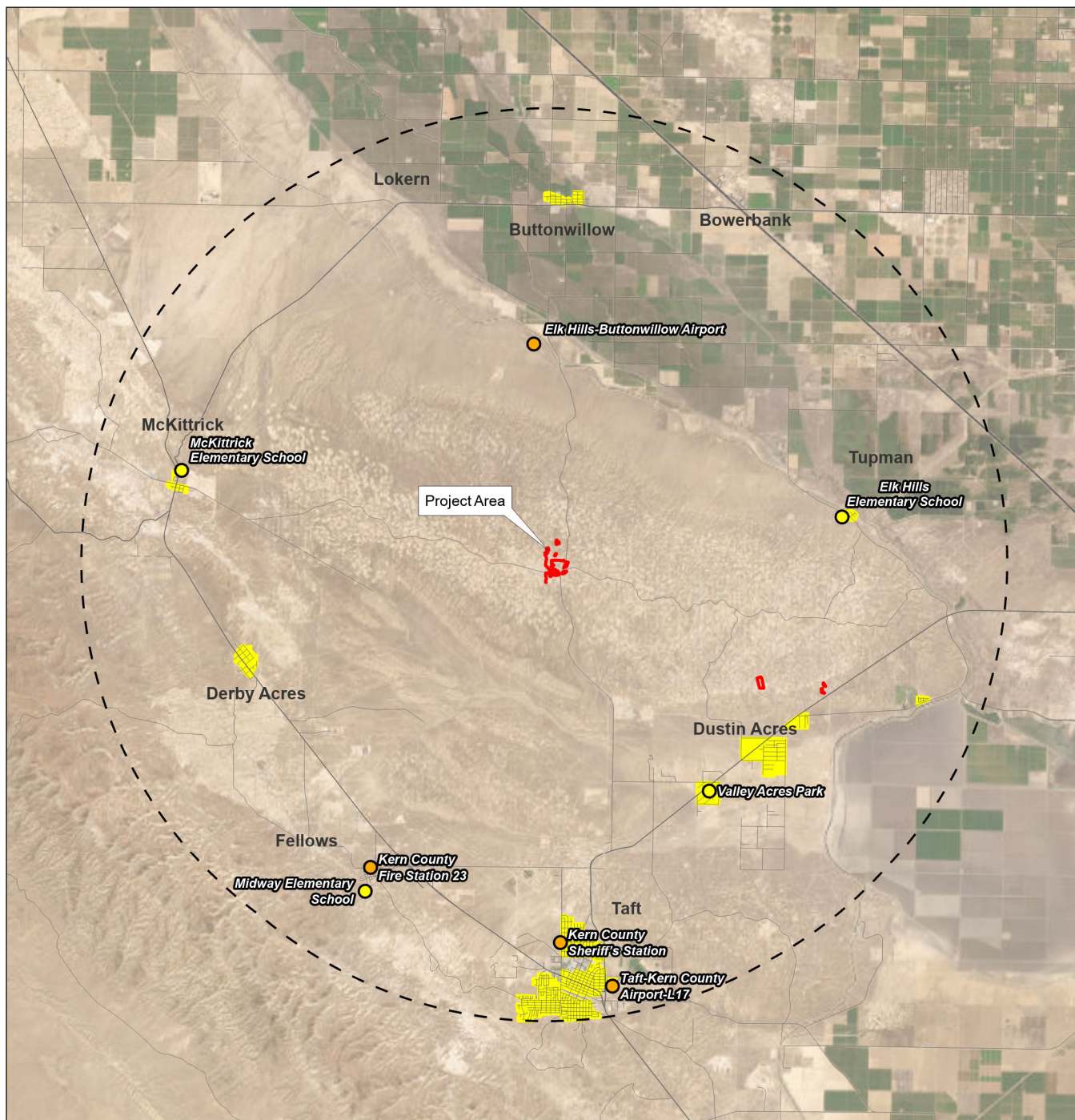
As defined by the Kern County General Plan, sensitive receptor is defined as a single or multi-family dwelling unit, place of public assembly (a legally permitted place where 100 or more people gather together in a building or structure for the purpose of amusement, entertainment, or retail sales), church, institution, school, or hospital.

The Project is located within the EHO in the Southwest edge of the San Joaquin Valley near Tupman in Kern County, California. This area is bordered on all sides by existing oil and gas exploration and production operations, and there are no noise or vibration sensitive land uses, including single or multi-family dwelling units, hotels, hospitals, parks, recreational areas, churches, schools, or care centers, located in the greater Project area. The closest noise sensitive receptors are well-removed from the Project site. The closest noise sensitive receptors are single family homes situated along Valley West Road north of Taft, California, located approximately 4.97 miles southeast of the Project site. The closest elementary school is located in Tupman, California, approximately 6.54 miles northeast from the Project site. Refer to Figure 3 – Sensitive Receptors Map.

² Ldn, or day-night noise level, is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 PM. to 7:00 AM.



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- Project Area
- 10-mile Buffer of Project Area
- Public Services
- Sensitive Receptors
- Sensitive Receptors (Residential Areas)

0 1.75 3.5
Miles
(At original document size of 8.5x11)
1:221,760



Project Location Prepared by MMD on 2025-07-31
Kern County, CA TR by CT 2025-07-31
Client/Project IR by ES on 2025-07-31
185806775

California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Figure No.

6

Title
Sensitive Receptors and Public Services

Notes
1. Coordinate System: NAD 1983 StatePlane
California V FIPS 0405 Feet
2. Data Sources: Stantec 2025.
3. Background: Esri, GEBCO, NOAA, National
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3.2 Existing Noise Conditions

The existing or ambient, noise environment in a project area is characterized by the area’s general level of development. Areas that are not urbanized are relatively quiet, while areas that are more urbanized are noisier as a result of roadway traffic, industrial activities, and other human activities.

Ambient noise levels near the closest noise sensitive receptors for the Project were measured and reported as part of the Environmental Noise Assessment for the approved CRC CTV I project in Kern County, California, which is located in the same EHO. Appendix H “Noise Assessment” was prepared by WJV Acoustics on September 27, 2023 (WJV Acoustics 2023). As stated in the Noise Assessment report:

WJV conducted long-term (24-hour) ambient noise measurements in the vicinity of the closest sensitive receptors to the greater project areas. The closest sensitive receptors are located at distances of 4.97 miles or greater from Project site areas. Measurements of existing ambient noise levels in the project vicinity were conducted on February 27, 2023 and long-term (24-hour) ambient noise level measurements were conducted at four (4) locations (sites LT-1, LT-2, LT-3, and LT-4). Long term ambient noise measurement site LT-1 was located within the community of Tupman, near the corner of Emmons Boulevard (Tupman Road) and Grace Boulevard. Ambient noise measurements site LT-2 was located in the vicinity of residential land uses along Taft Highway. Ambient noise measurement site LT-3 was located in the vicinity of residential land uses in the community of Dustin Acres, near the intersection of Taft Highway and Tank Farm Road. Ambient noise measurement site LT-4 was located within the community of McKittrick, near the corner of Reward Road and 2nd Street.

The ambient noise measurement locations conducted as part of the CRC CTV I project are shown in Figure 4. The range of measured hourly average noise levels (Leq), hourly maximum noise levels (Lmax), background noise levels (L90), and day-night noise level (Ldn) are presented in Table 3.

Table 3 Measured Ambient Noise Levels

Measurement Location	Measured Leq Range, dB	Measured Lmax Range, dB	Measured L90 Range, dB	Measured Ldn, dB
LT-1	39.8–63.1	56.4–86.6	32.1–47.6	60.8
LT-2	58.1–74.3	77.8–88.4	46.1–54.2	74.1
LT-3	55.9–70.6	77.7–87.5	43.1–51.4	71.4
LT-4	38.0–55.7	55.8–76.0	31.3–49.1	56.7

It should be noted the conditions in the Project area measured in 2023 have not changed from the time these measurements were taken; therefore, the ambient noise levels are not anticipated to be different now due to new CalCapture features.

Also, the Energy Commission's power plant certification regulations require that noise measurements be made at noise-sensitive locations where there is a potential for an increase of 5 dB(A) or more over existing



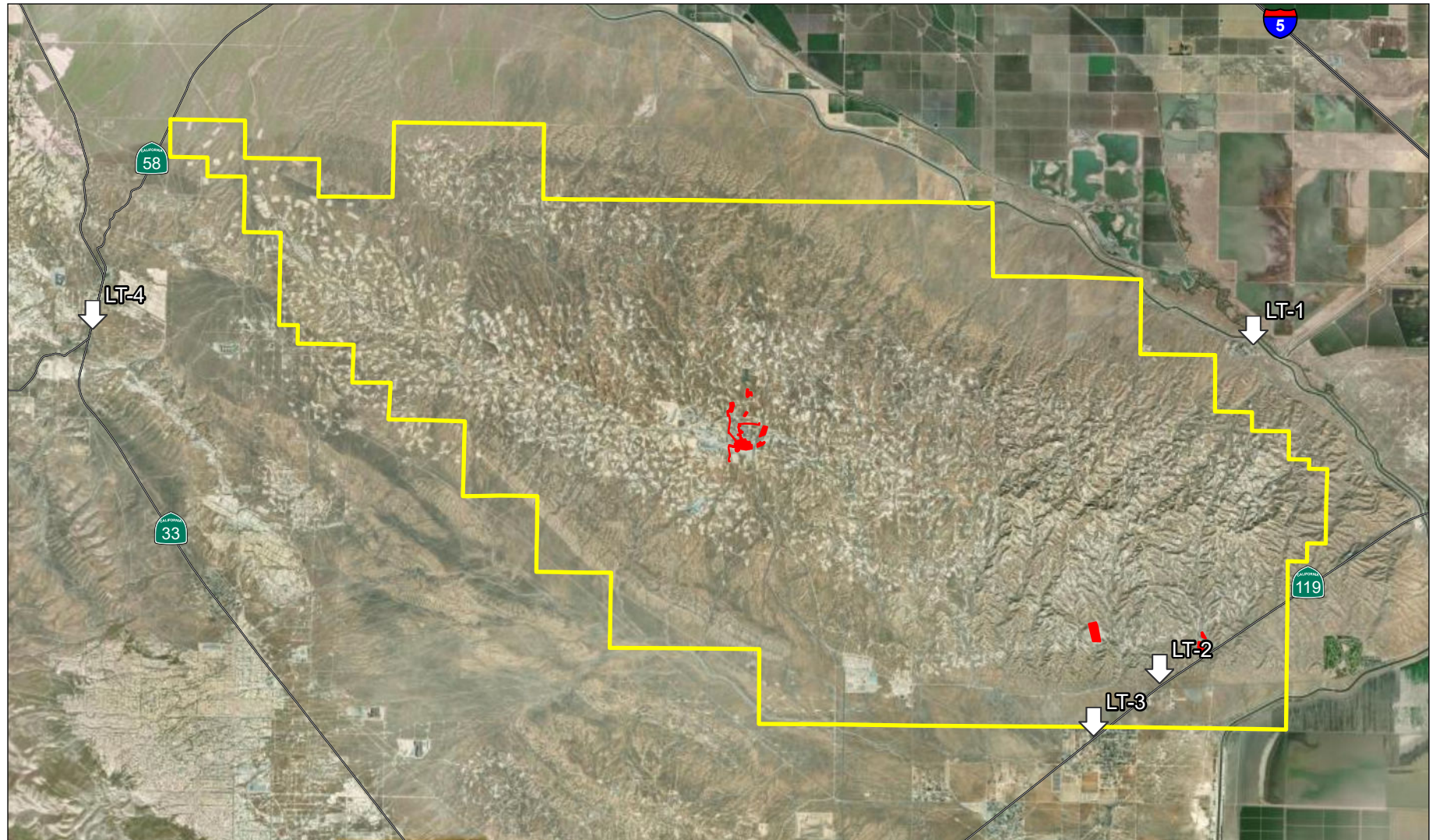
CalCapture CCS Project – Noise Study

3 Existing Noise Environment

background noise levels during construction or operation of a proposed power plant. Given the ambient noise measurements for the CRC CTV I project were taken at the closest noise sensitive receptors to the Project area, the measurements are inclusive of the Energy Commission's power plant certification regulations.



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-  Project Area
-  Ambient Noise Monitoring Sites
-  Elk Hills Oilfield Administrative Boundary



0 1 2 Miles
(At original document size of 8.5x11)
1:126,720

Notes

1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Elk Hills admin boundary from CA Dept. of Conservation; Stantec, 2025.
3. Background: County of San Luis Obispo, Maxar, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap



Project Location
Kern County, CA
Client/Project
California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
185806775

Prepared by MMD on 10/2/2025
TR by EH on 10/2/2025
IR by TS on 10/2/2025

Figure No.

4

Title
**CRC Carbon Terravault 1 Project
Vicinity and Ambient Noise
Monitoring Sites**

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

4 Environmental Analysis

4.1 Significance Criteria

In accordance with the CEQA Guidelines Appendix G Environmental Checklist,³ the following questions are to be analyzed and evaluated to determine whether noise impacts are significant. Would the proposed project:

- a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- b. Generation of excessive groundborne vibration or groundborne noise levels.
- c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 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.

4.2 Impact Analysis

4.2.1 NOI-1 Impact Analysis

Impact NOI-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.
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Construction Noise

Less than significant impact. Two types of short-term noise impacts could occur during construction. The first type of short-term noise impact is traffic noise from construction equipment and worker vehicular commutes on the local roads leading to and from the Project site.

According to the Stantec Transportation Impact Analysis report, during construction, trucks would access the Project site from the north side of Skyline Road, directly across from the main construction personnel parking area. Construction trucks could access the Project site from the south via SR 119 exit on I-5, Valley West Road, Elk Hills Road and Skyline Road; from the north, the Project site could be accessed via SR 58 exit on I-5, Wasco Way, Brite Road, Buttonwillow Drive, Elk Hills Road and Skyline Road. There would be no construction equipment or worker traffic directly traveling by noise sensitive receptors.

³Appendix G Environmental Checklist Form, Guidelines for the Implementation of the California Environmental Quality Act, 2023



Depending on the construction activities underway, the construction equipment requirements would vary throughout the course of any given month and across the life of the Project. There would be approximately 20 working days per month over the estimated 2.5-year duration of construction of the Project. As a conservative assumption, the Project would generate a maximum of 12 construction equipment vehicles trips per day. The number of workers on the site would vary daily. However, at the peak of construction, the number of workers on site is anticipated to be 500 workers, which includes indirect personnel.

Traffic noise depends primarily on vehicle speed (tire noise increases with speed), proportion of medium and large truck traffic (trucks generate engine, exhaust, and wind noise in addition to tire noise), and number of speed control devices, such as traffic lights and stop signs (accelerating and decelerating vehicles and trucks can generate more noise).

Changes in traffic volumes can also have an impact on overall traffic noise levels. For example, it takes 25 percent more traffic volume to produce an increase of only 1 dB(A) in the ambient noise level. For roads already heavy with traffic volume, an increase in traffic numbers could even reduce noise because the heavier volumes could slow down the average speed of the vehicles. A doubling of traffic volume results in a 3 dB(A) increase in noise levels.

To describe future noise levels due to construction traffic added from the Project, existing and existing plus Project construction average annual daily traffic volumes (Tables 5 and 7 in the Stantec Transportation Report, respectively) were used to determine the percentage increase of construction traffic on the roads to the Project site and nearby sensitive receptors. The general rule listed above stating 25 percent more traffic volume results in a 1 dB(A) increase in the ambient noise level was used to estimate the dB(A) change due to the added construction traffic as noted in Table 4 below.

Table 4 Traffic Volumes and Estimated Noise Increase – Construction Traffic

Roadway Section	Existing Average Annual Daily Traffic Volumes	Existing Plus Construction Average Annual Daily Traffic Volumes	Percentage Increase of Traffic	Estimated dB(A) Change	Impact (Yes/No)?
1. SR-58, east of Wasco Way	4,700	5,206	10.8%	+0.4 dB(A)	No
2. Wasco Way, south of SR 58	1,000	1,506	50.6%	+2 dB(A)	No
3. Brite Road, west of Mirasol Avenue	1,400	1,906	36.1%	+1.4 dB(A)	No
4. Elk Hills Road, south of Buttonwillow Drive	1,400	1,906	36.1%	+1.4 dB(A)	No



CalCapture CCS Project – Noise Study
4 Environmental Analysis

Roadway Section	Existing Average Annual Daily Traffic Volumes	Existing Plus Construction Average Annual Daily Traffic Volumes	Percentage Increase of Traffic	Estimated dB(A) Change	Impact (Yes/No)?
5. Elk Hills Road, north of Skyline Road	1,300	1,806	38.9%	+1.6 dB(A)	No
6. Valley West Road, east of Elk Hills Road	1,100	1,606	46%	+1.8 dB(A)	No
7. SR 119 at East Limits Dustin Acres	9,600	10,106	5.3%	+0.2 dB(A)	No
8. SR 119 at Tupman Road	10,400	10,906	4.9%	+0.2 dB(A)	No
9. SR 119 at Jct Rte 43 North	10,600	11,106	4.8%	+0.2 dB(A)	No
10. SR 119 at Jct Rte 5	6,300	6,806	8.0%	+0.3 dB(A)	No

The construction of the Project is expected to minimally increase traffic counts along all roads around the Project site. There would essentially be no change in traffic noise (2 dB(A) or less) expected along these streets. Therefore, the construction of the Project should not cause increased traffic noise levels over the existing conditions, and this would have a less than significant impact.

The second type of short-term noise impact is related to noise generated during construction. Construction tasks for the Project would involve a varying mix of equipment, and consequently, different noise characteristics depending on the activity. The various construction operations would change the character of the noise generated at the Project site and the noise level as construction progresses. The construction of this Project would involve equipment, such as off-highway trucks, tractors, front-end loaders, pile and HDD drill rigs, cranes, graders, rollers, excavators, welders, and forklifts.

Table 5 lists the type of construction equipment anticipated for the Project and the maximum and average noise level estimates as measured at 4.97 miles from the operating equipment. This distance represents the approximate distance between the Project and the closest sensitive receptor, which are single family homes situated along Valley West Road north of Taft, California, located approximately 4.97 miles southeast of the Project site.



Table 5 Estimated Construction Noise Levels at Nearest Sensitive Receptor

Construction Equipment Source	Distance to Nearest Sensitive Receptor, miles	Sound Level at Receptor		
		Lmax, dB(A)	Acoustical Use Factor	Leq, dB(A)
Crane	4.97	26.6	16%	18.7
Drill Rig Truck	4.97	25.2	20%	18.7
Excavator	4.97	26.8	40%	22.8
Forklift	4.97	29.5	40%	25.5
Front-End Loader	4.97	25.2	40%	21.2
Grader	4.97	31.1	40%	27.1
Off-Highway Truck	4.97	22.5	40%	18.6
Roller	4.97	26.1	20%	19.1
Tractor	4.97	30.1	40%	26.1
Welder	4.97	20.1	40%	16.1

Source: FHWA RCNM, v1.1, 2006

A reasonable worst-case noise condition for general construction activity is that a grader, tractor, and forklift would operate simultaneously. This represents a conservative scenario, as it assumes that all three pieces of equipment would be operating at the same time and same place. Construction would occur in sequential phases; thus, in reality, it is not likely the three loudest pieces of equipment would be operating simultaneously at the exact location of the Project site closest to the nearest sensitive receptor. Nevertheless, the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) calculated that this scenario would result in a combined noise level of 35.1 dBA Lmax and 31.1 dBA Leq at 4.97 miles (FHWA 2006).

Any increase in noise levels from construction activities would be temporary and intermittent. Noise generated from construction activities is also calculated to be well below the 65 dB(A) Ldn exterior noise level required by Implementation Measure F in the Kern County General Plan and would be below the lowest ambient noise levels measured at the closest noise sensitive receptors to the Project area listed in Table 5 above. Therefore, impacts from construction noise on the surrounding sensitive receptors is less than significant.

Construction workers present on the Project site would be in close proximity to and exposed to the noise generated by the construction equipment listed in Table 5. Table 6 again lists the type of construction equipment anticipated for the Project and the maximum and average noise level estimates as measured at 50 feet from the operating equipment to approximate the noise exposure of a worker near the equipment.



Table 6 Estimated Noise Levels for Construction Workers

Construction Equipment Source	Distance to Worker, Feet	Sound Level at Receptor		
		Lmax, dB(A)	Acoustical Use Factor	Leq, dB(A)
Crane	50	80.6	16%	72.6
Drill Rig Truck	50	79.1	20%	72.2
Excavator	50	80.7	40%	76.7
Forklift	50	83.4	40%	79.4
Front-End Loader	50	79.1	40%	75.1
Grader	50	85.0	40%	81.0
Off-Highway Truck	50	76.5	40%	72.5
Roller	50	80.0	20%	73.0
Tractor	50	84.0	40%	80.0
Welder	50	74.0	40%	70.0

Source: FHWA RCNM, v1.1, 2006

The noise levels generated from individual pieces of construction equipment could be as high as 80.0 dB(A) at 50 feet. Again, assuming a grader, tractor, and forklift are operating simultaneously at the same distance from a receptor, the FHWA RCNM calculates a combined noise level of 89.0 dB(A) Lmax and 85.0 dB(A) Leq at 50 feet (FHWA 2006). Noise levels from construction equipment at shorter distances would be louder.

As per OSHA regulations, noise exposure levels exceeding 85 dB(A) require that employers develop a hearing conservation program. Such programs include adequate warning, the provision of hearing protection devices, and periodic employee testing for hearing loss. Since construction noise levels could exceed 85 dB(A), OSHA regulations would apply. Compliance with existing OSHA regulations would ensure that the impact of construction noise to on site construction workers would be less than significant.

Operational Traffic Noise

Less than significant. As noted in the Stantec Transportation Impact Analysis report, once constructed, the operational aspects of the Project would require up to 16 employees per day, with certain employees shared with the power plant. Assuming 16 employees per day, there would be approximately 40 trips per day based on an average trip rate of 2.5 trips per employee. As noted above, it takes a 25 percent more traffic volume in traffic volume to produce a 1 dB(A) increase in the ambient noise levels. Adding 80 worker vehicles to the existing average annual daily traffic volumes is significantly less than the 500 vehicles added for construction. Therefore, traffic from employees should not cause increased traffic noise levels over the existing conditions, and this would have a less than significant impact.



Operational Noise

Less than significant. The noise levels generated from the Project that are received by the Project site and surrounding community were calculated using the SoundPLAN acoustic modeling software. SoundPLAN uses standardized prediction techniques (per International Organization for Standardization [ISO] 9613) and accounts for distance, topography, vegetation, and the effect of shielding and reflections produced by buildings and acoustic barriers. The following conditions and assumptions were included in the exterior noise analysis of this Project:

- The noise-producing Project equipment considered in the SoundPLAN analysis included one CO₂ product compressor (K-601), one blower (K-201), and one lean vapor compressor (K-301). Other Project elements, including storage tanks, ducting systems, and support systems are non-noise producing and therefore, are not included in the analysis. The location of this equipment on the Project site and the heights of the equipment are included in Figure 5.
- The noise levels provided by the equipment manufacturers that were included in the SoundPLAN analysis were as follows:
 - CO₂ product compressor (K-601): Sound Pressure Level of 108.1 dB(A) at 1 meter
 - Blower (K-201): Sound Power Level of 142.3 dB(A)
 - Lean Vapor Compressor (K-301): Sound Pressure Level of 98.4 dB(A) at 1 meter
- The equipment was set to run 24-hour a day in the model and equipment was assumed to be operating simultaneously at full capacity.
- The SoundPLAN model assumes no solid fencing around the Project. Therefore, no noise losses from barriers or fencing were included in the model.

Using the provided equipment sound data, the equipment layout shown in Figure 5, and the assumptions listed above, the worst-case modeled noise levels expected from the Project site were evaluated. Average noise level contours from the Project to the surrounding areas are included in Figure 6. Note, all modeled noise levels assume a worst-case scenario with all equipment operating at full capacity for 24 hours a day and no solid barriers or screens on the property.

Local residences that could be potentially impacted by operational noise are located at a significant distance from the provided equipment locations. Consequently, there are no local residences captured in the contour figures. The outermost green contour in Figure 6 predicts a day-night noise level of 50 dB(A) Ldn at approximately 3.1 miles from the center of the Project equipment. The closest noise-sensitive receptors are located approximately 4.97 miles southeast of the Project site. Therefore, based on distance attenuation, Project noise levels received at the sensitive receptors would be quieter than 50 dB(A) Ldn and also below the 65 dB(A) Ldn exterior noise level required by Implementation Measure F in the Kern County General Plan. Therefore, based on the analysis, the overall impact of noise from the Project on the surrounding properties is less than significant.



Workers present on the Project site would be in close proximity to the equipment noted above and would be exposed to noise levels generated from the equipment. As shown in Figure 6, noise levels generated by the Project equipment could exceed 95 dB(A) in close proximity to the equipment.

As per OSHA, the noise exposure level of workers is regulated at 90 dB(A) over an 8-hour work shift to protect hearing (29 CFR 1910.95). Employee exposure to levels exceeding 85 dB(A) requires that employers develop a hearing conservation program, including adequate warning, the provision of hearing protection devices, and periodic employee testing for hearing loss. Since workers on the Project site would be exposed to noise levels above 85 dB(A), OSHA regulations would apply. Compliance with existing OSHA regulations would ensure that the impact of operational noise to on-site workers would be less than significant.



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Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Stantec, 2025.
3. Background: Stantec World Topographic Map: NAIP Imagery: Source: Esri, USDA FSA World Imagery (Firefly): Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

-  Carbon Capture & Sequestration Site
-  Site Offices
-  Primary Parking Area
-  Overflow Parking Area

0 250 500 Feet
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1:6,000

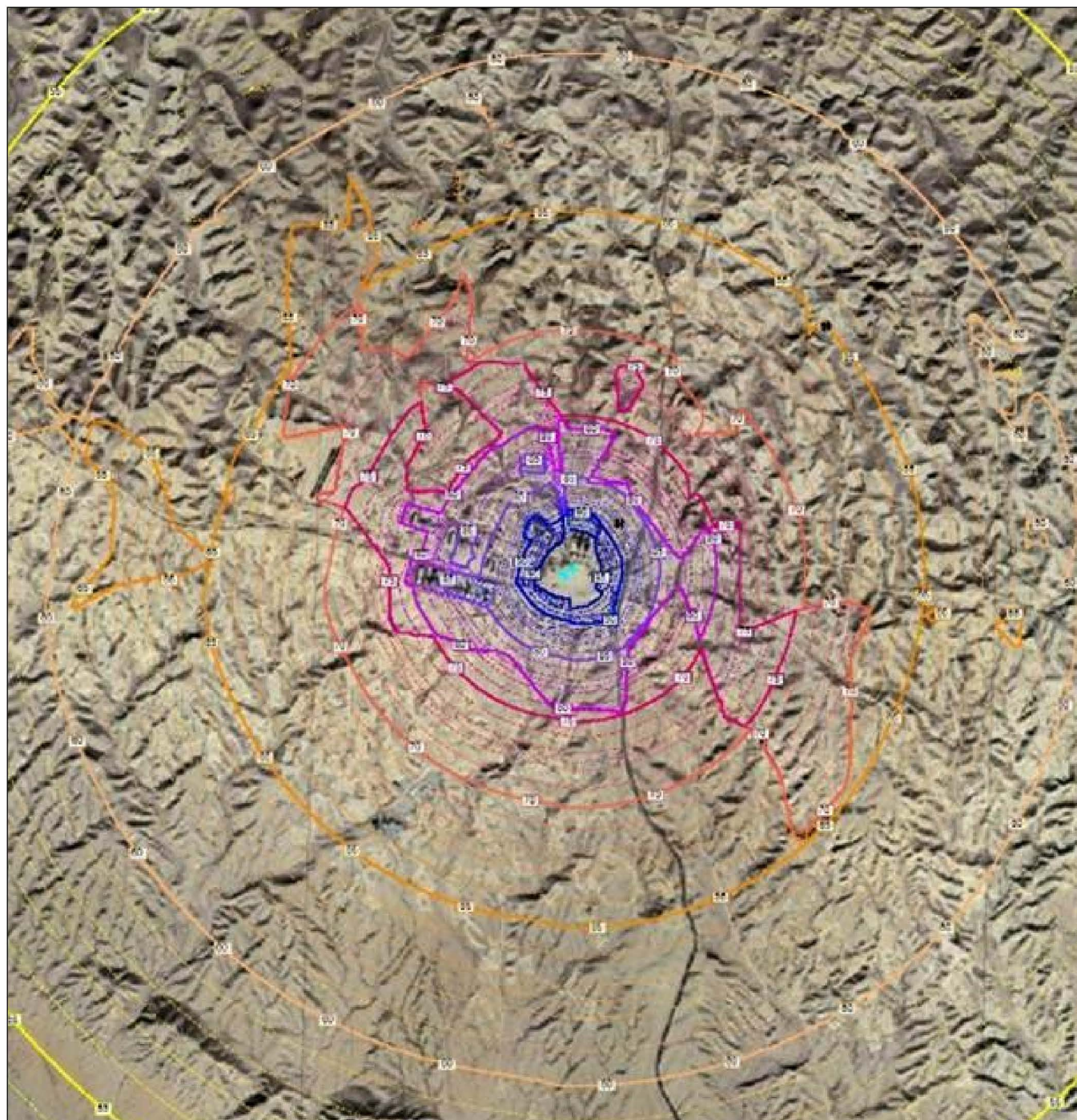


Project Location Kern County, CA
Client/Project 185806775
Prepared by MMD on 9/25/2025
TR by EH on 9/25/2025
IR by TS on 9/25/2025

California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Figure No. 5

Title
Project Site Plan with Equipment Location and Heights

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



Project Area

Noise level Day/Night in dB(A)

- >= 95
- 90 - 95
- 85 - 90
- 80 - 85
- 75 - 80
- 70 - 75
- 65 - 70
- 60 - 65
- 55 - 60
- 50 - 55
- 45 - 50
- 40 - 45

0 1,500 3,000 Feet
(At original document size of 8.5x11)
1:36,000



Project Location Prepared by MMD on 2025-06-12
Kern County, CA TR by EH on 2025-06-12
Client/Project IR by TS on 2025-06-12
185806775

California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
No. 6

Title
**SoundPLAN Noise Contour Map for
the CalCapture CCS Project
Equipment**

Notes

1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Stantec, 2025.
3. Background: Maxar

4.2.2 NOI-2 Impact Analysis

Impact NOI-2 Generation of excessive groundborne vibration or groundborne noise levels.

Less than significant. During construction of the Project, equipment such as loaded trucks, drill rig trucks, and rollers would be used but the equipment would be 4.97 miles from the closest sensitive receptor.

Vibration generated by the Project construction would not be measurable at the closest sensitive receptors 4.97 miles away.

4.2.3 NOI-3 Impact Analysis

Impact NOI-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 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

No impact. The Project is not located within 2 miles of a public airport or private airstrip. The nearest public airport is the Elk Hills Buttonwillow Airport, located approximately 6 miles north of the Project site. No impact would occur.



5 Cumulative Impacts

For the purposes of this report, a five-mile radius from the proposed Project is considered pertinent for the following cumulative analysis. Due to the proposed Project's location within an existing oil and gas field, the impacts of the Project together with the impacts of past, present, and reasonably foreseeable future oil and gas development, including wells and abandonment activity to implement CCS projects, constitute cumulative impacts. Kern County has prepared an EIR that evaluated the potential impacts (including contributions to cumulative impacts) of oil and gas development in connection with previously proposed amendments to the Kern County Zoning Ordinance: Final Environmental Impact Report - Revisions to the Kern County Zoning Ordinance - 2015(C) Focused on Oil and Gas Local Permitting, certified on November 9, 2015, supplemented by a Supplemental EIR certified on December 11, 2018; a Supplemental Recirculated EIR (SREIR) certified on March 8, 2021; and an Addendum adopted on August 23, 2022, (collectively referred to as the "Oil and Gas EIR"). The information in these documents provides evidence for the record of the analysis of cumulative impacts of the disturbance, construction activities, and operation of the wells and abandonment activities as projected in the Oil and Gas EIR.

As stated in the Oil and Gas EIR and in the Environmental Noise Assessment for the approved CRC CTV I project, "Since oil and gas activities could occur anywhere in the Project area, the combined noise levels from the Project and existing or reasonably foreseeable projects depend on the proximity of oil and gas activities to other noise sources at a specific location. Noise generated from construction of certain types of wells authorized under the Project, conservatively assuming use of the largest exploratory deep drilling rig (Kenai Rig), could be in excess of 65 dB(A) up to 4,000 feet from a construction site. Therefore, significant noise impacts would occur if there are sensitive noise receptors within 4,000 feet of the construction of a well. Other projects with construction or operations occurring concurrently with construction or operations of a well would also contribute to noise levels experienced by nearby sensitive noise receptors.

Other projects associated within the study area would also have to comply with the Kern County Noise Ordinance and/or the Noise Element of the Kern County General Plan; therefore, would have to ensure noise levels did not exceed standards. The potential contribution of the Project as an impact on sensitive receptors more than 5 miles away for operations and construction are not cumulatively considerable.



6 Mitigation Measures

No mitigation measures are required for the Project to mitigate noise impacts.



7 Conclusion

Noise and vibration associated with the Project is primarily generated by construction activities and operational noise from the activity equipment on the Project site. Based on the FHWA RCNM program and SoundPLAN acoustic noise modeling, the Project would generate temporary construction noise and operational noise that would not exceed the 65 dB(A) Ldn exterior noise level required by Implementation Measure F in the Kern County General Plan and would not exceed the lowest measured ambient noise levels at the closest noise sensitive receptors. Noise generated from the construction and operation of the Project would not significantly impact the existing acoustic environment in the area. Therefore, the Project would have a less than significant impact on the neighboring receptors.



8 References

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Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

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