

**INITIAL STUDY / MITIGATED NEGATIVE DECLARATION
KEBO OIL AND GAS, Inc.
CRPC et. al. #B-1 PROJECT
TULARE COUNTY SPECIAL USE PERMIT NO. PSP 20-023**



**County of Tulare
5961 South Mooney Blvd.
Visalia CA 93277**

**November 2019
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SECTION 1 – INTRODUCTION

1.1 PROJECT TITLE

CRPC et. al. #B-1

1.2 LEAD AGENCY NAME AND ADDRESS

County of Tulare
5961 South Mooney Blvd.
Visalia CA 93277

Contact: Hector Guerra
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(559) 624-7121

1.3 PROJECT APPLICANT NAME AND ADDRESS

KEBO OIL AND GAS, Inc. (KEBO)
701 Wildcat Drive
Portland, Texas 78374

Contact: Ken Boester
Kebo.og11@gmail.com
(210) 218-1781

1.4 PROJECT LOCATION

The proposed project is located 3.5 miles north of the Community of Richgrove in Tulare County, California (see Figure 1). As shown in Figure 2, the proposed project site is located in the northeast quarter of the southwest quarter of Section 12 (Township 24 South, Range 26 East MDBM). The longitude and latitude for the proposed project site using mapping datum NAD 83 is 35.854725N, -119.119545W. The surface location for the proposed project site would be on land owned by County of Tulare.

1.5 INTENDED USE OF THE INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

This IS/MND is an informational document that is intended to inform the County of Tulare, the lead agency under the California Environmental Quality Act (CEQA), the California Geologic Energy Management Division (CalGEM), other responsible and trustee agencies, and the public of potential environmental effects of the proposed project. A list of lead, responsible and trustee agencies is presented in Table 1.5-1.

**Table 1.5-1
Lead, Responsible and Trustee Agencies**

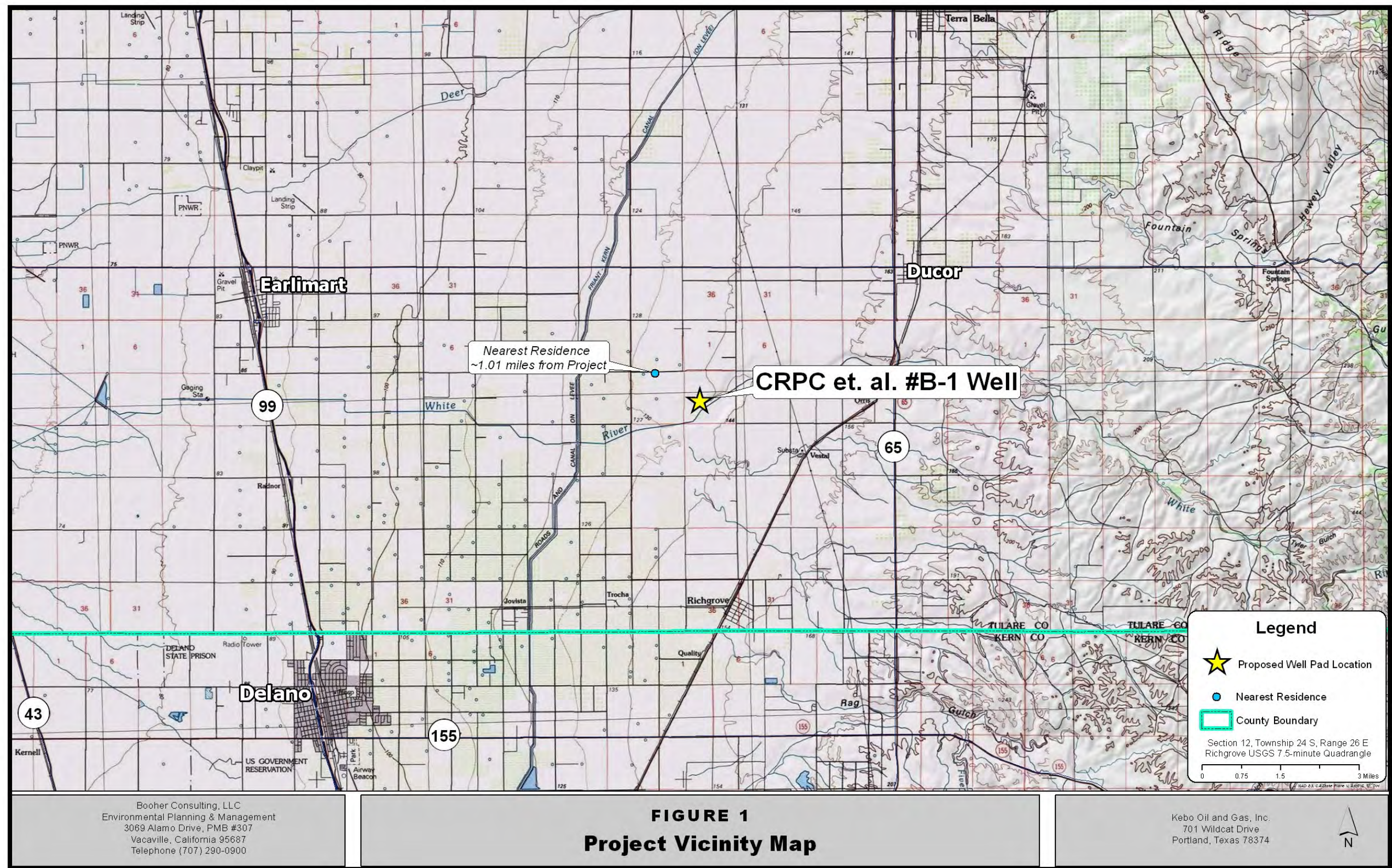
Agency	Permits and Other Approvals	Environmental Review/Consultation Requirements
Tulare County	<ul style="list-style-type: none"> ▪ Reviews, revises, and approves environmental documentation prepared by Geologic Energy Management Division ▪ Special Use Permit reviewed by Planning Commission 	<ul style="list-style-type: none"> ▪ Lead agency ▪ Reviews and revises Draft Initial Study/Mitigated Negative Declaration ▪ Publishes NOI, circulates Draft Initial Study/Mitigated Negative Declaration to OPR. ▪ Certifies environmental document
California Geologic Energy Management Division (CalGEM)	<ul style="list-style-type: none"> ▪ Permit to Conduct Well Operations 	<ul style="list-style-type: none"> ▪ Responsible agency
San Joaquin Valley Air Pollution Control District (SJVAPCD)	<ul style="list-style-type: none"> ▪ SJVAPCD Regulation VIII Fugitive PM10 Prohibition (Rules 8011, 8021, 8031, 8061, and 8071). 	<ul style="list-style-type: none"> ▪ Responsible agency ▪ Consulted during preparation of the Draft Initial Study/Mitigated Negative Declaration
California Regional Water Quality Control Board (RWQCB)	<ul style="list-style-type: none"> ▪ Notice of Intent - Construction General Permit ▪ 401 Water Quality Certification, if needed 	<ul style="list-style-type: none"> ▪ Responsible agency ▪ Reviews Draft Initial Study/Mitigated Negative Declaration
California Department of Fish and Wildlife (CDFW)	<ul style="list-style-type: none"> ▪ Burrowing Owl Management Plan, if needed ▪ Section 2081 State Incidental Take Permit 	<ul style="list-style-type: none"> ▪ Responsible/Trustee agency ▪ Consulted during preparation of the Draft Initial Study/Mitigated Negative Declaration

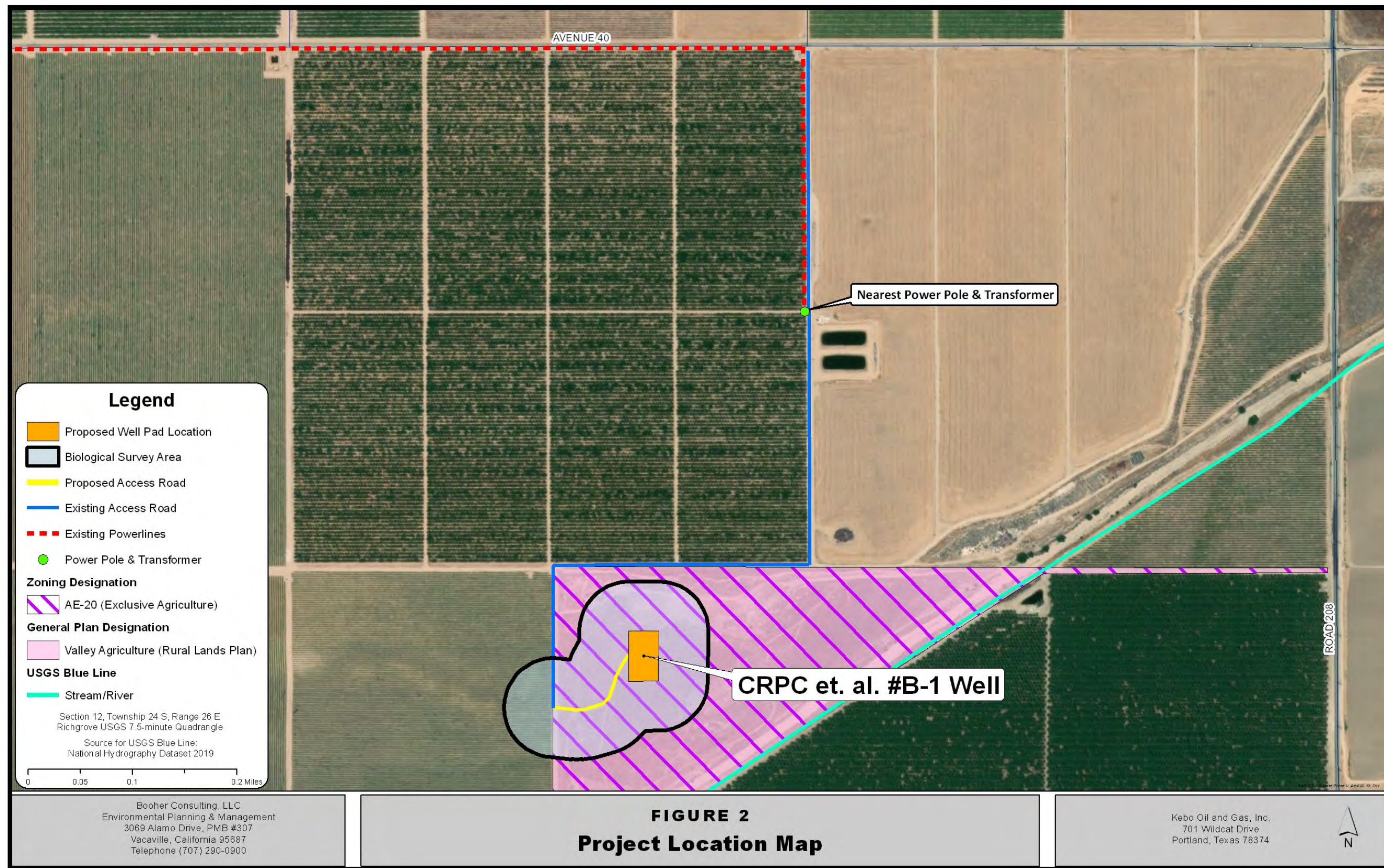
1.6 PUBLIC REVIEW AND COMMENT

Consistent with the State CEQA Guidelines sections 15072 and 15073, this IS/MND is being circulated to agencies and to interested individuals who may wish to review and comment. Written comments may be submitted to the Tulare County Resource Management Agency (RMA) during the 30-day public review period. Prior to taking action on the MND and the proposed project, the RMA would consider the MND along with all comments received.

Written comments should be sent to:

Hector Guerra, Chief Environmental Planner
Resource Management Agency - County of Tulare
5961 South Mooney Blvd.
Visalia CA 93277
hguerra@co.tulare.ca.us
(559) 624-7121





SECTION 2 – PROJECT DESCRIPTION

2.1 PROJECT NEED

The purpose of the proposed project is to develop additional oil and natural gas reserves in the State of California. The objective of the proposed project is to locate untapped oil and natural gas sources with potential for development.

2.2 PROJECT SETTING

The proposed project site is situated within unincorporated area of Tulare County. The proposed project site is located in the northeast quarter of the southwest quarter of Section 12 (Township 24 South, Range 26 East MDBM). The proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill, and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. A well pad would be constructed, measuring approximately 150 feet by 250 feet (0.86 acres). A new access road, measuring 100 feet by 14 feet (0.03 acres) will be constructed for the proposed project. The new segment of road will be constructed between an existing farm road and an existing road that bisects the parcel. The existing road, measuring 440 feet in length by 12 feet, will be widened to a 14-foot width (0.02 acres) for access to the well site. As shown in Figure 2 and 3, Highway 99, Avenue 40 and an existing dirt farm access road will provide the primary access to the project area.

2.3 PROJECT DESCRIPTION

Kebo Oil and Gas, Inc. (Kebo) is proposing the construction of a new well pad and to drill one (1) exploratory oil and gas well, the CRPC, et al., B, #1 to a depth not to exceed 5,000' TVD subsurface. If economical quantities of oil and gas are discovered in the proposed well, KEBO would install the necessary production equipment on the well site as described below under the production phase section. No well stimulation, including hydraulic fracturing or enhanced oil recovery technique, are proposed as part of this project. KEBO anticipates commencing project activities in 2020 and completing all drilling activities in 2020. If the well is non-commercial, the well will be plugged and abandoned, the disturbed land will be restored to substantially the same conditions as existed prior to construction of the project.

2.3.1 Pre-activity Survey

Prior to any ground disturbing activities, KEBO has conducted various tasks including on site meetings with the property owners, biological surveys, cultural resource surveys, and geodetic surveys of the proposed project site. Mobile emission sources associated with pre-activity surveys are presented in Table 2.3.1-1 below.

**Table 2.3.1-1
Equipment for Pre-activity Surveys**

Mobile Sources	Number	Round Trip Distance (miles)	Duration (days)	Total Miles Driven
Passenger Car/Pickup Truck Roundtrips (KEBO Land Department)	1	80 miles*	1	80
Passenger Car/Pickup Truck Roundtrips (Biological Survey)	1	200 miles/day**	1	20
Passenger Car/Pickup Truck Roundtrips (Cultural Resource Survey)	1	80 miles/day*	1	80
Passenger Car/Pickup Truck Roundtrips (Geodetic Survey)	1	80 miles*	1	80

*Round Trip Distance is calculated from Bakersfield, California.

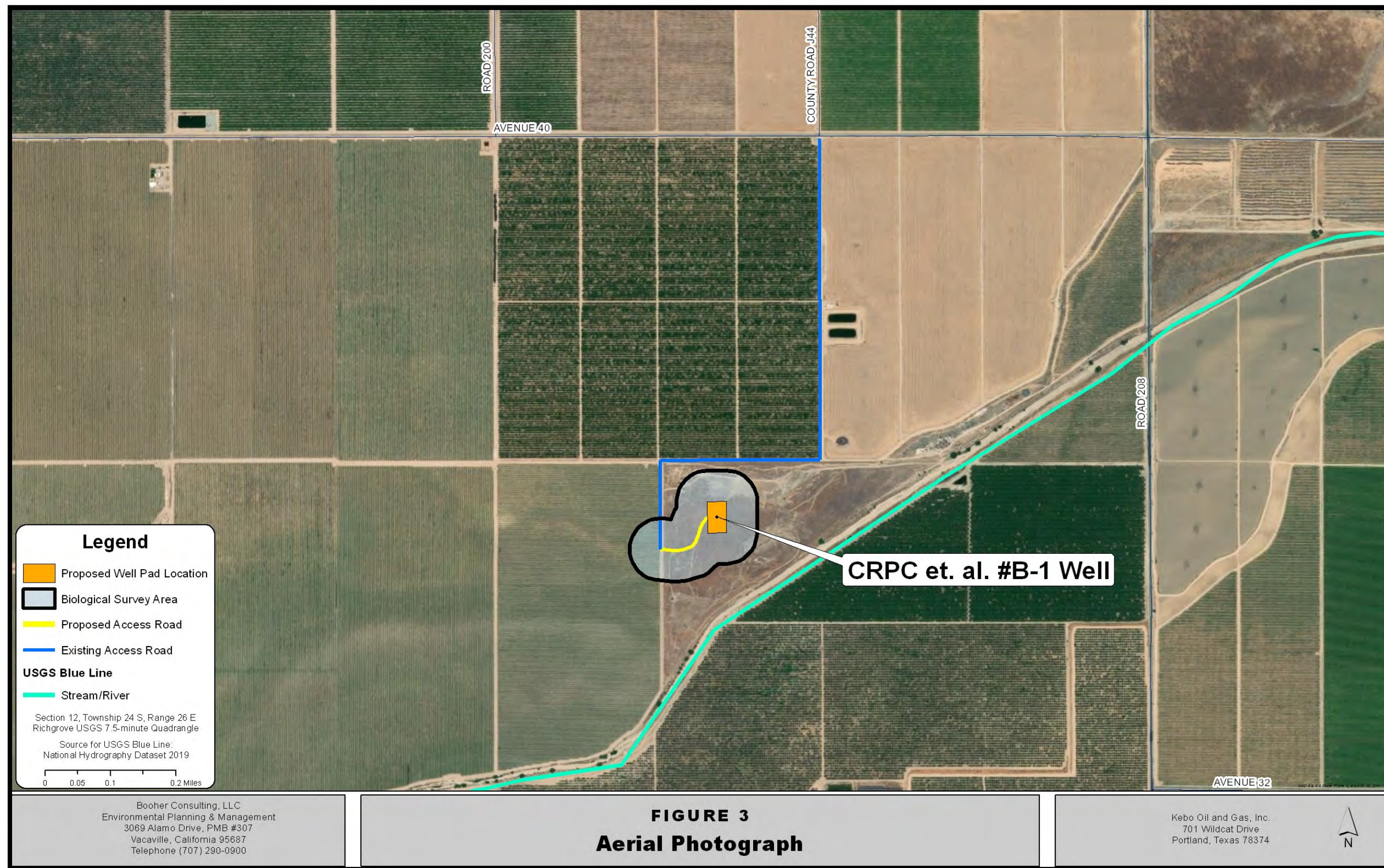
**Round Trip Distance is calculated from Tehachapi, California.

The proposed project includes the following phases, which would be completed during 2020: a site preparation phase, a drilling phase, a completion and testing phase and, if deemed productive, an installation of production equipment phase, a production phase and a plugging and abandonment phase. If the well is non-commercial, the well will be plugged and abandoned, the disturbed land will be restored to substantially the same conditions as existed prior to construction of the project. If the well is commercial productive, the production phase may extend beyond 2020. The estimated average life of a well is 8 years. Although there is potential that the well will not be commercially productive, to ensure a complete analysis, this project description assumes the well would become a producing well in order to fully analyze the potential effects of the proposed project. A detailed description of each phase is presented below.

2.3.2 Site Preparation Phase

During site preparation activities the proposed project site would be graded, watered, and compacted to establish a level and solid foundation for the drilling rig. Written notification shall be given to the San Joaquin Valley Air Pollution Control District (SJVAPCD) at least 48 hours prior to beginning earthmoving operations. Construction personnel would be notified prior to ground disturbing activities of the possibility of buried prehistoric or historic cultural or paleontological deposits and endangered species concerns. Earthmoving activities for the project would not exceed a combined total disturbance of 5.0 acres per day nor involve movement, deposition, or relocation of more than 2,500 cubic yards per day of bulk materials on any three (3) or more days.

KEBO proposes to use a closed loop system for the drilling process. All drilling mud and cuttings would be contained in above ground tanks and transported offsite for disposal. According to the California Oil and Gas Fields, Volume 1 – Central California Report (1998),



the base of fresh water in the Jasmin Oil Field (closest oil field to the proposed project site) is at a depth of 2,750 feet. Equipment planned for site preparation activities is presented in Table 2.3.2-1.

**Table 2.3.2-1
Equipment for Site Preparation Phase**

On Site Equipment	Number of Equipment	Horsepower	Days of Operation	Total Hours/Day
Grader	1	140	3	10
Roller	1	100	1	10
Compactor	1	100	3	10
Mobile Sources	5	Round Trip Distance (miles)	Duration (days)	Total Miles Driven
Dump Truck	1	80 miles*	3	240
Water Truck	1	80 miles*	3	240
Passenger Car/Pickup Truck Roundtrips	1	80 miles*	3	240
Heavy Truck/Semi	1	80 miles*	2	160

*Round Trip Distance is calculated from Bakersfield, California.

Site preparation activities would require approximately 500 barrels (bbls) of water (2,100 gallons) for the proposed project site. Surface water will be obtained from a local farmer which is just east of the location. Completing site preparation activities would require approximately 3 days for the proposed project site. Approximately 4 personnel would be on site at any given time during the site preparation phase.

2.3.3 Drilling Phase

The drilling phase for the proposed project would last a total of approximately 10.5 days. The drilling phase would consist of 2.5 for mobilization and demobilization of the drill rig and seven (7) days for drilling various tasks associated with the drilling phase including installation of blowout prevention equipment, cementing, mud-logging, etc. Approximately one (1) day when various evaluation tasks are being done, the drill rig motors would be idle or not running.

Drilling equipment mobilization and demobilization would require a maximum number of 28 round trip vehicle trips. The project would use Ensign Rig 531 and the drill rig is approximately 70 feet in height. This drill rig is registered in the California Air Resources Board (CARB) Portable Emission Registration Program. Temporary facilities, equipment and materials necessary for the drilling operation would be set up and stored on site (i.e., drilling mud supplies, water, drilling materials and casing, crew support trailers, pumps and piping, portable generators, fuels and lubricants, etc.). Equipment required during the drilling phase is listed in Table 2.3.3-1.

**Table 2.3.3-1
Equipment for Drilling Phase**

On-Site Equipment	Number	Horsepower	Days of Operation	Total Hours/Day
Forklift	1	50	7	8
Drill Rig Motor #1 (Electric)	1	1600 HP	9	12 hours/day/average
Mud Pump Motor #2 (Electric)	1	1600 HP	9	1 hour/day/average
Power Generators	2	Diesel 1350	7	24
Small Generators	1	Diesel 100	7	24
Mobile Sources	Number	Round Trip Distance (miles/day)	Duration (days)	Total Miles Driven
Vacuum Truck	2	80 miles*	7	1120
Passenger Car/Pickup Trucks (Light Duty)	5	80 miles*	9	3600
Heavy Duty Trucks (Normal Operations)	1	80 miles*	7	560
Heavy Duty Trucks (Mobilization and Demobilization of Equipment)	56	80 miles*	2.5	11200
Heavy Duty Trucks (Hazardous Waste Disposal if necessary)	1	200 miles**	1	200
Heavy Duty Trucks (Diesel Fuel Delivery for Drill Rig)	1	80 miles*	2	160
Heavy Duty Trucks (Surface Casing Cementing)	2	80 miles*	1	160
Heavy Duty Trucks (Production Casing Cementing)	2	80 miles*	1	160

*Round Trip Distance is calculated from Bakersfield, California.

**Round Trip Distance is calculated from Waste Management Kettleman Hills Facility.

Night lighting would be used only during the drilling phase. However, to the greatest extent possible night lighting would be directed inward and down to minimize off site impacts without compromising safety.

Drilling of the well would require the use of 2,000 bbls (84,000 gallons) of water. As previously stated, water would be supplied from a local farmer just east of the proposed project site.

Hazardous materials would be used and stored on site according to applicable federal, state and local regulations. However, the proposed project would not result in the production of hazardous waste as defined and regulated by Titles 22 and 23 of the California Code of Regulations. Rather, the project would generate non-hazardous designated waste, including drilling mud and oily wastes that can be disposed of in a permitted Class II disposal facility. In the unlikely event that

anticipated waste were to later be deemed a hazardous Class I waste by the state, such waste would be treated, stored and disposed of at an offsite facility permitted to accept Class I waste.

Hazardous materials and non-hazardous waste would be transported by a licensed transportation company. The commercial transportation, identification, and designation of appropriate shipping routes for these materials would be in conformance with the adopted Tulare County and Incorporated Cities Hazardous Waste Management Plan (HWMP). California regulates the transportation of hazardous waste originating or passing through the State, by statute, in the California Health and Safety Code and Title 22 and 13 of the California Code of Regulations (CCR). The California Highway Patrol (CHP) and Caltrans have primary responsibility for enforcing these regulations and responding to hazardous materials transportation emergencies. The CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provides detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP. The CHP conducts regular inspections of licensed transporters to ensure regulatory compliance. Transportation of hazardous waste is also regulated under the Hazardous Materials Regulations Section 49 of the Code of Federal Regulations (CFR). The Environmental Protection Agency (EPA) exempts the transportation of produced water, drilling fluids, drill cuttings and rig wash as the EPA believes these “special wastes” are lower in toxicity than other wastes being regulated as hazardous waste under Resource Conservation and Recovery Act (*Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations*, EPA, October 2002).

Above ground portable tanks would be used for mixing and storing of drilling fluids. All drilling fluids would be disposed of in accordance with the requirements of the Central Valley Regional Water Quality Control Board (RWQCB). The solids that accumulate in the above ground tanks would be transported offsite for disposal. If any wastes test positive for hazardous material, KEBO will be disposed of at the Waste Management Kettleman Hills Facility, a licensed Class 1, 2 and 3 treatment, storage and disposal facility. This facility is permitted to receive up to 2,000 tons/day (*Active Landfills Profile*, www.calrecycle.ca.gov) and is located approximately 60 miles due west of this location.

Surface casing would be set, cemented, with blowout prevention equipment installed at the wellhead and tested. The amount of surface casing used depends upon factors such as expected well pressures, the depth of fresh water, and the competence of the strata in which the well casing would be cemented. Blowout prevention equipment is bolted to the surface casing. All successive drilling occurs through the blowout prevention equipment, which can be operated to control well pressures at any time. Blowout prevention equipment is regulated by the State of California, Geologic Energy Management Division (CalGEM). CalGEM engineers would be notified for required tests and other required operation witnessing (blowout prevention and surface casing integrity).

Well casing is designed to protect surface and underground waters suitable for irrigation or domestic purposes defined as having <3,000 mg/L Total Dissolved Solids (TDS). CALGEM’s well construction standards have the fundamental purpose to ensure zonal isolation. Zonal

isolation means that oil coming up a well from the productive, underground geologic zone would not escape the well and migrate into other geologic zones, including zones that might contain fresh water. Zonal isolation also means that the fluids that are put down a well for any purpose would stay in the intended zone and not migrate to another zone. To achieve zonal isolation, CALGEM regulations require that a cement barrier be placed between the well and surrounding geologic strata or stratum. The cement bonds to the surrounding rock and well casing and forms a barrier against fluid migration. Cement barriers must meet certain standards for strength and integrity. If these cement barriers do not meet the standards, CALGEM requires the oil operator to remediate the cement barrier. Metal casings, which can be several layers depending on the depth of a well, also separate the fluids going up and down a well bore from the surrounding geology. If the integrity of a well is compromised by ground movement or other mechanisms, the well operator must remediate the well to ensure zonal isolation. Well casing standards are prescribed in Title 14 CCR, Division 2, Chapter 4, Subchapter 1, Article 3, Sections 1722.2 – 1722.4. According to the California Oil and Gas Fields, Volume 1 – Central California Report (1998), the base of fresh water in the Jasmin Oil Field (closest oil field to the proposed project site) is at a depth of 2,750 feet. Sufficient weighted drilling fluid would be used to prevent any uncontrolled flow from the well and additional quantities of drilling fluid would be available at the site (Title 14, CCR Section 1722.6). Equipment, personnel, and supply deliveries would continue through the course of the drilling program. Drilling activities would operate 24 hours per day. Approximately eight (8) personnel would be on site at any given time during the drilling operations.

2.3.4 Completion and Testing Phase

Once target depth is reached, the well would be fully evaluated to determine whether it is likely to be capable of production or should be plugged and abandoned. If the well appears to be capable of production based on the geologic and engineering evaluation of the formations, a production rig would be moved on site to complete the well and prepare the well for production testing. The completion rig would operate 10 hours per day for approximately three (3) days. During this period, the wellbore would be perforated for production testing. Approximately four (4) personnel would be on site when the completion rig is operating.

KEBO estimates that testing operations for the well would require approximately 180 days. A well would be tested with a flow line running from the well to a portable oil/gas separator. Any produced gas would be flared to mitigate emissions of VOCs. The portable temporary flare used would be included in the California Portable Emission Registration Program. Separated crude oil (no water production is expected) would be stored on site in approximately four (4) to six (6) 500 bbl (21,000 gallon) portable tanks for transportation to off-site facilities.

KEBO anticipates 80 barrels (3,360 gallons) of oil and no (0) barrels of produced water would initially be produced daily from the well. During the testing phase, the oil would be transported offsite by truck to ALON USA Refinery located at 6451 Rosedale Highway, Bakersfield, CA 93308. KEBO estimates that 5 truck trips per week would be required to transport the oil to ALON USA about 40 miles to the south of the proposed project site. Equipment required for completing and testing a well is listed below in Table 2.3.4-1.

**Table 2.3.4-1
Equipment for Completion and Testing Phase**

Equipment Type	Number	Horsepower	Days of Operation	Hours Operation Daily
Completion Rig	1	350	3	10
Oil/Gas Separator	1	N/A	180	24
500 BBL Portable Tanks	2	N/A	180	24
External Combustion Testing Flare (Maximum heat output of less than/or equal to 50 mmbtu/day, natural gas fired)	1	N/A	180	24
Mobile Sources	Number	Round Trip Distance	Duration (days)	Total Miles Driven
Pick-up Truck	1	80 miles*	180	14,400
Heavy Duty Truck (Oil Transport)	1	80 miles*	5 trips/week in 180 days	10,285

*Round Trip Distance is calculated from Bakersfield, California.

2.3.5 Production Phase

If the well is determined to have economic production potential, production equipment including a well head and pump jack with a 15 horsepower (hp) motor would be installed at the proposed project site. Equipment used during the installation of production equipment is listed in Table 2.3.5-1 and equipment used during the production phase is listed in Table 2.3.5-2.

Approximately eight (8) personnel would be on site at any given time during the production equipment installation phase. During the production phase, the production site would be visited daily by one (1) personnel.

**Table 2.3.5-1
Equipment for Production Equipment Installation Phase**

On-Site Equipment	Number	Horsepower	Days of Operation	Total Hours/Day
Welding Truck	1	200	5	8
Side-Boom Crane	1	250	5	8
Mobile Sources	Number	Round Trip Distance (miles)	Duration (days)	Total Miles Driven
Passenger Car/Pickup Trucks (Light Duty)	5	80 miles*	5	2000
Heavy Duty Trucks	3	80 miles*	5	1200

*Round Trip Distance is calculated from Bakersfield, California.

**Table 2.3.5-2
Equipment for Production Phase**

Equipment	Number	Horsepower	Days of Operation	Total Hours/Day
Well Head	1	N/A	365	24
Pumping Unit with 15 hp engine	1	15	365	10
Work-over Rig (every 3 years)	1	345	2	10
Mobile Sources	Number	Round Trip Distance (miles)	Duration (days)/year	Total Miles Driven
Pick-up Truck	1	80 miles*	365	29,200
Pick-up Truck (Workover Rig every 3 years)	3	80 miles*	2	480

*Round Trip Distance is calculated from Bakersfield, California.

KEBO proposes to paint all production equipment in camouflage or an earthen tone to blend in with the environment and to prevent glare. KEBO estimates that approximately five (5) days would be required for installation of production equipment. KEBO anticipates 80 barrels of oil and no (0) barrels of produced water would be produced daily from the well. The oil would be transported from the proposed project site by truck to ALON USA Refinery located approximately 40 miles to the south of the proposed project site. KEBO estimates that five (5) truck trips per week would be required to transport the oil to ALON USA Refinery. The proposed project site would be visited daily by KEBO staff, which would result in a daily pick-up truck round-trip for the life of the well. KEBO anticipates the use of a work-over rig for maintenance purposes would be required for a maximum of two (2) days every three (3) years for the life of the well.

2.3.6 Plugging and Abandonment Phase

Once the well stops producing, or is deemed to not be an economic, commercial producing well, it would be plugged and abandoned in accordance with CCR Sections 1723 – 1723.8. In this case, a Notice of Intention to abandon the well would be submitted to CALGEM for review and approval. During a typical well abandonment, recoverable casing would be salvaged from the well and the wellbore would be plugged with cement. The wellhead (and any other equipment) would be removed, the casing cut off 6 feet below ground surface, capped with a welded plate and the cellar backfilled. This process would be completed in five (5) days. The land contours of the proposed project site would be re-established to near grade conditions as present at the time of project initiation. After all equipment is removed, the site would be restored to its condition prior to construction of the well pad. Table 2.3.6-1 lists the equipment required for the plugging and abandonment phase.

**Table 2.3.6-1
Equipment for Plugging and Abandonment Phase**

On-Site Equipment	Number	Horsepower	Days of Operation	Total Hours/Day
Production Rig (Internal Combustion Engine)	1	345	5	10
Mobile Sources	Number	Round Trip Distance (miles)	Duration (days)	Total Miles Driven
Passenger Car/Pickup Trucks (Light Duty)	3	80 miles*	5	1,200
Heavy Duty Trucks (Normal Operations)	3	80 miles*	2	480

*Round Trip Distance is calculated from Bakersfield, California.

Table 2.3.6-2 lists the estimated days it would take to complete each phase of the project.

**Table 2.3.6-2
Estimated Days to Complete Project Activities excluding Production**

Activity	Days
Pre-activity survey	1
Site Preparation	3
Drilling	10.5
Completion and Testing Phase	183
Installation of Production Equipment	5
Plugging and Abandonment	5
Total days per site	207.5

2.4 MITIGATION, MONITORING AND REPORTING PLAN

The proposed project incorporates mitigation measures designed to avoid or reduce environmental impacts to less-than-significant levels. Mitigation measures are fully described in the following sections and are included in the Mitigation Monitoring and Reporting Plan (Appendix A). KEBO is required to implement all mitigation measures listed in the Mitigation Monitoring or Reporting Plan and Tulare County and CalGEM are responsible for enforcing this compliance.

SECTION 3 – ENVIRONMENTAL ANALYSIS AND CHECKLIST

This Initial Study (IS) has been completed for the proposed project in accordance with CEQA. The IS identifies site-specific conditions and impacts, evaluates their potential significance, and discusses ways to avoid or lessen impacts that are potentially significant. The information, analysis and conclusions included in this IS provide the basis for determining the appropriate document needed to comply with CEQA. Based on the analysis and information contained herein, the IS shows that proposed project's construction and operation may have a significant effect on the environment; however, with inclusion of the proposed mitigation, potential impacts would be reduced to a less-than-significant level. Therefore, Tulare County concludes that an MND is the appropriate CEQA document for the proposed project.

3.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The evaluation of environmental impacts provided in Section 3.3 of this MND is based, in part, on the environmental impact thresholds in CEQA Guidelines Appendix G. An impact assessment matrix is provided as part of the evaluation for each environmental issue area. The column headings for each impact assessment matrix are defined below.

- **Potentially Significant Impact.** This column has been checked if there is substantial evidence that a project-related environmental effect may be significant. If there are one or more "Potentially Significant Impacts" a Project Environmental Impact Report (EIR) would be prepared.
- **Less than Significant with Mitigation.** This column has been checked when the project may result in a significant environmental impact, but the incorporation of identified project-specific mitigation measures into the project would reduce the identified effect(s) to a less than significant level.
- **Less than Significant Impact.** This column has been checked when the project would not result in any significant effects. The project's impact is less than significant even without the incorporation of a project-specific mitigation measure.
- **No Impact.** This column has been checked when the project would not result in any impact in the category or the category does not apply.

Descriptions and analyses of project-specific and cumulative impacts that could result from proposed project implementation are provided in Section 3.5 of this IS. A summary of the environmental impact analysis conclusions is provided in Table 3.1-1.

Table 3.1-1. Environmental Issues and Potential Impacts

No Impact	Less Than Significant Impact	Less Than Significant Impact with Mitigation
Aesthetics	Agricultural and Forest Resources	Air Quality
Energy	Greenhouse Gas Emissions	Biological Resources
Geology and Soils	Noise	Cultural Resources
Hydrology and Water Quality	Transportation/Traffic	Hazards and Hazardous Materials
Land Use and Planning		
Mineral Resources		
Population and Housing		
Public Services		
Recreation		
Tribal Cultural Resources		
Utility and Service Systems		
Wildfires		

3.2 ENVIRONMENTAL DETERMINATION

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION would be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there would not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A MITIGATED NEGATIVE DECLARATION would be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the Environment and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a significant effect on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets, if the effect is a "potentially significant impact" or "potentially significant unless mitigated." An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature: _____



Hector Guerra, Chief Environmental Planner
Tulare County Resource Management Agency

Date: _____

10/19/20

Signature: _____



Reed Schenke, Director & Environmental Assessment Officer
Tulare County Resource Management Agency

Date: _____

10.19.20

3.3 GENERAL PLAN DESIGNATION

The proposed project site is located on property designated as Valley Agriculture (Rural Lands Plan) in the Tulare County 2012 General Plan. Consistent with the Tulare County General Plan Framework Concept 4: Natural and Cultural Resources of the Tulare County General Plan (Tulare County 2012), the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques. Additionally, the Tulare County General Plan Environmental Resource Management (Chapter 8, Policies ERM-3.3, -3.4 and -3.5) states that the County shall allow oil and gas extraction activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land (see Figure 2).

3.4 ZONING DESIGNATION

As shown in Figure 2, the proposed project area is zoned Exclusive Agriculture (AE-20).

3.5 ENVIRONMENTAL CHECKLIST

SECTION 3.5.1 – Aesthetics

ISSUES	Potentially Significant Impact		Less Than Significant with Mitigation Incorporated		Less Than Significant Impact		No Impact
AESTHETICS <i>Would the project:</i>							
a. Have a substantial adverse effect on a scenic vista?	_____		_____		_____		X
b. Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?	_____		_____		_____		X
c. In non-urbanized areas, substantially degrade the existing visual character or quality of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	_____		_____		_____		X
d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	_____		_____		_____		X

3.5.1.1 Environmental Setting

The proposed project site is situated within unincorporated area of Tulare County. The proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. Agriculture in proximity to the proposed project site spans an area approximately one (1) square mile in all directions from the proposed project site. The Sequoia National Forest is located to the east and the Temblor (Coast) Mountain Range is located to the west of the proposed project site. The nearest residential structure is located 1.01 miles to the northwest of the proposed project site. No designated scenic roadways are located adjacent to or in the vicinity of the proposed project site. No significant scenic resources are located at or near the proposed project site. Site photographs and photo simulations of the proposed project follow (Photographs 1 through 4 and Figures 4, 5 and 6).



Photograph 1

View north from the proposed KEBO CRPC et. al. #B-1 Project site.



Photograph 2

View south of the proposed KEBO CRPC et. al. #B-1 Project site.



Photograph 3

View east of the proposed KEBO CRPC et. al. #B-1 Project site.



Photograph 4

View west of the proposed KEBO CRPC et. al. #B-1 Project site.

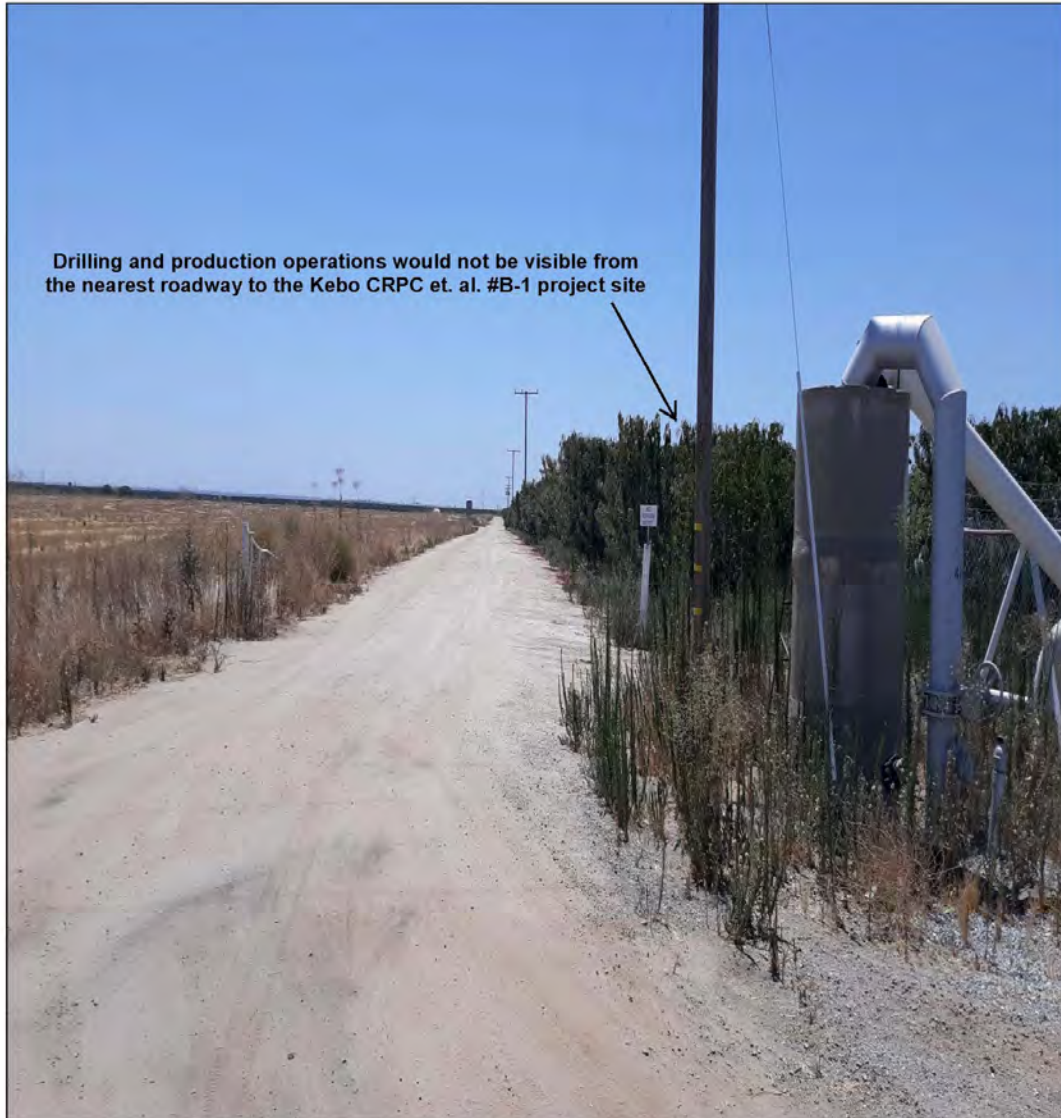


Figure 4

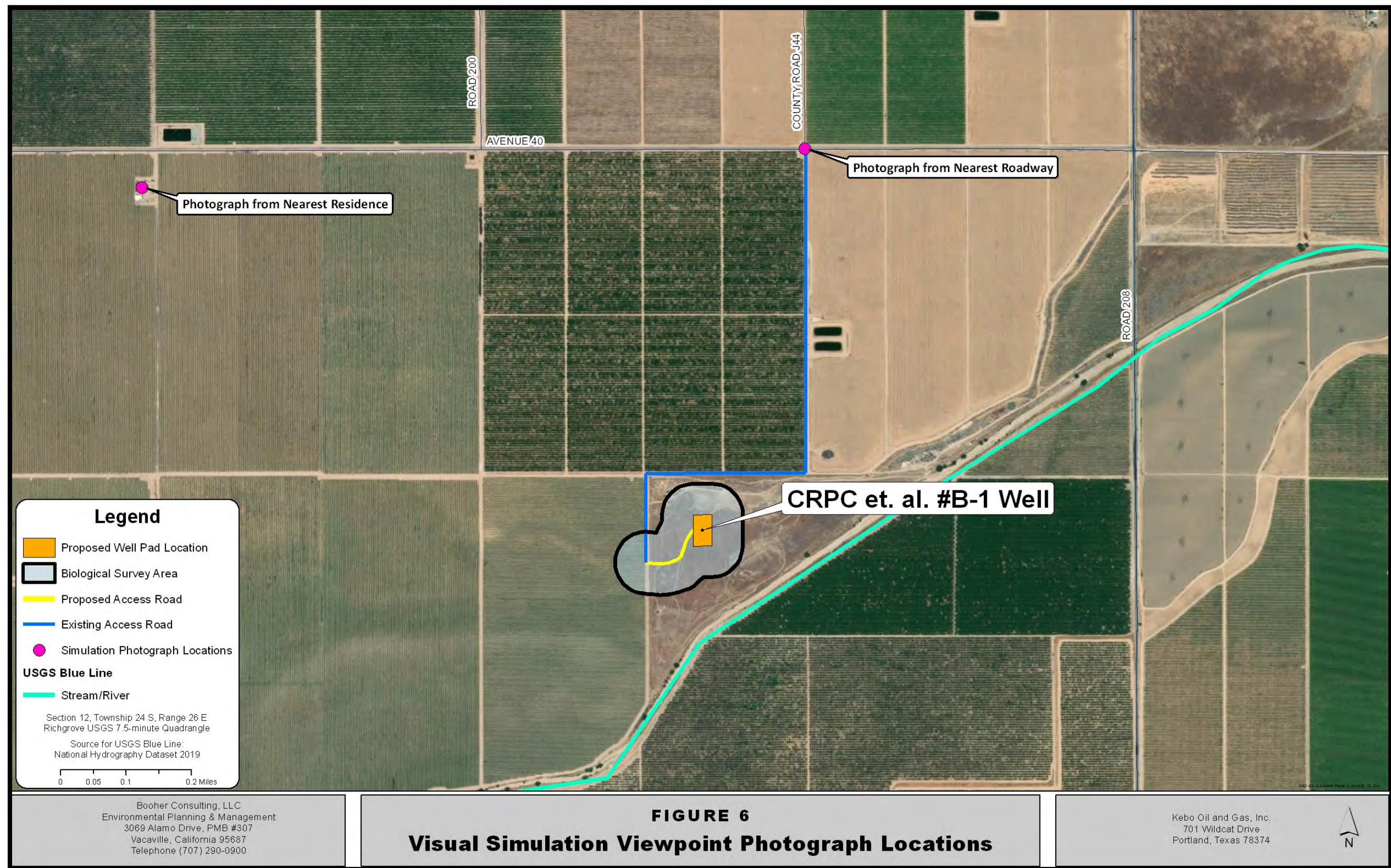
**Photo Simulation of Drilling and Production Operations
View to the Southeast towards the Proposed Project Site from Nearest Residence
Approximately 1.01 Miles Northwest of Well Site**

Booher Consulting, LLC
Environmental Planning & Management
3069 Alamo Drive, PMB #307
Vacaville, California 95687
Telephone (707) 290-0900

Kebo Oil and Gas, Inc.
701 Wildcat Drive
Portland, Texas 78374



<p align="center">Figure 5 Photo Simulation of Drilling and Production Operations View to the South of the Proposed Project Site from Avenue 40 Approximately 0.61 Miles Northeast of Well Site</p>	
<p align="center">Booher Consulting, LLC Environmental Planning & Management 3069 Alamo Drive, PMB #307 Vacaville, California 95687 Telephone (707) 290-0900</p>	<p align="center">Kebo Oil and Gas, Inc. 701 Wildcat Drive Portland, Texas 78374</p>



3.5.1.2 Regulatory Setting

Federal

No federal laws or regulations related to Aesthetics are applicable to the project.

State

California Scenic Highway Program

The California Department of Transportation (Caltrans) oversees the California Scenic Highway Program. The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been officially designated.

Local

Tulare County General Plan

The project is consistent with polices listed below from the Tulare County General Plan:

Framework Concepts - Concept 4: Natural and Cultural Resources

As Tulare County develops its unincorporated communities, the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques.

ERM-1.15 Minimize Lighting Impacts

The County shall ensure that lighting associated with new development or facilities (including street lighting, recreational facilities, and parking) shall be designed to prevent artificial lighting from illuminating adjacent natural areas at a level greater than one foot candle above ambient conditions.

LU-2.3 Open Space Character

The County shall require that all new development requiring a County discretionary approval, including parcel and subdivision maps, be planned, and designed to maintain the scenic open space character of open space resources including, but not limited to, agricultural areas, rangeland, riparian areas, etc., within the view corridors of highways. New development shall utilize natural landforms and vegetation in the least visually disruptive way possible and use design, construction and maintenance techniques that minimize the visibility of structures on hilltops, hillsides, ridgelines, steep slopes, and canyons.

LU-7.2 Integrate Natural Features

The County shall emphasize each community's natural features as the visual framework for new development and redevelopment.

LU-7.19 Minimize Lighting Impacts

The County shall ensure that lighting in residential areas and along County roadways

shall be designed to prevent artificial lighting from reflecting into adjacent natural or open space areas unless required for public safety.

3.5.1.3 Impact Analysis

a) Would the project have a substantial adverse effect on a scenic vista?

During the drilling phase of the proposed well, drilling equipment would not be visible from the nearest residence located 1.01 miles to the northwest of the proposed project site (see Figure 4). Additionally, drilling equipment would not be visible from Avenue 40, the nearest public roadway to the proposed project site (see Figure 5). Therefore, drilling equipment would not obstruct views of the Sequoia National Forest to the east, the Temblor (Coast) Mountain Range to the west, the almond orchards to the south or cherry orchards to the north of the proposed project site. If economic quantities of oil are discovered, production equipment would be installed on the proposed project site. Production equipment would be less than 25 feet in height and would not obstruct scenic views of the Sequoia National Forest to the east, the Temblor (Coast) Mountain Range to the west, the almond orchards to the south or cherry orchards to the north of the proposed project site. (see Figures 4 and 5). No impact.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

The proposed project site is not located adjacent to or in the vicinity of an eligible or designated state scenic highway. Therefore, the proposed project would not damage the scenic resources within a state scenic highway. No Impact.

c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

The proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings. Proposed project related equipment is similar in size and shape to equipment associated with existing agricultural facilities nearby as well as other oil and gas exploration and production operations located in the vicinity of the proposed project site and throughout the project vicinity. No impact.

d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Lighting would only be used at night during the short-term drilling phase of the project, which is expected to last 10 and a half days for the proposed well. During use, lighting would be directed downward (e.g., shielded), and inward, accordingly, offsite impacts would be avoided. There would not be a new source of permanent and substantial light or glare created within the project area. No impact.

3.5.1.4 Mitigation Measures

No impacts were identified. No mitigation necessary.

3.5.1.5 References

California Department of Transportation. 2019. *Officially Designated California State Scenic Highway Routes*. Accessed online 2019: www.dot.ca.gov/hg/ILandArch/scenic/shwy.htm

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online: <http://generalplan.co.tulare.ca.us/>

SECTION 3.5.2 – Agricultural and Forest Resources

ISSUES	Potentially Significant Impact		Less Than Significant with Mitigation Incorporated		Less Than Significant Impact		No Impact
AGRICULTURAL AND FOREST RESOURCES <i>Would the project:</i>							
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	_____		_____		X		_____
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	_____		_____		_____		X
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104 (g))?	_____		_____		_____		X
d. Result in the loss of forest land or conversion of forest land to non-forest use?	_____		_____		_____		X
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use, or conversion of forest land to non-forest use?	_____		_____		_____		X

3.5.2.1 Environmental Setting

The proposed project site is situated within unincorporated area of Tulare County. The proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. Agriculture in proximity to the proposed project site spans an area approximately one (1) square mile in all directions from the proposed project site. The Sequoia

National Forest is located to the east and the Temblor (Coast) Mountain Range is located to the west of the proposed project site.

The proposed project site is located on property designated as Valley Agriculture (Rural Lands Plan) in the Tulare County 2012 General Plan. The proposed project site is identified on the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP, 2016) as Prime Farmland.

3.5.2.2 Regulatory Setting

Federal

No federal laws or regulations related to agricultural or forest resources are applicable to the project.

State

California Department of Conservation, Division of Land Resource Protection Farmland Mapping and Monitoring Program (FMMP)

The Division of Land Resource Protection's (DLRP) Important Farmland Mapping and Monitoring Program (FMMP) produced maps and statistical data on California farmlands. The important farmland categories combine technical information from the NRCS soil classifications and current land use as the basis to identify agricultural lands. These designations are used in planning California's present and future agricultural land resources. Maps of important farmlands are prepared by the California Department of Conservation as part of its Farmland Mapping and Monitoring Program. The FMMP has a minimum mapping unit of 10 acres, with parcels that are smaller than 10 acres being absorbed into the surrounding classifications.

The list below provides a comprehensive description of all the categories mapped by the FMMP. Collectively, lands classified as Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are referred to as Farmland. (California Department of Conservation 2004)

- Prime Farmland. Farmland that has the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four (4) years prior to the mapping date.
- Farmland of Statewide Importance. Farmland is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to stored soil moisture. Land must have been used for irrigated agricultural production at some time during the four (4) years prior to the mapping date.
- Unique Farmland. Farmland of lesser quality soil that is used for the production of the state's leading agricultural crops. This land is usually irrigated but may include non-

irrigated orchards or vineyards, as found in some climatic zones in California. Land must have been cropped at some time during the four (4) years prior to the mapping date.

- Farmland of Local Importance. Land of importance to the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee.
- Grazing Land. Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.
- Urban and Built-up Land. Land occupied by structures with a building density of at least one (1) unit to 1.5 acres, or approximately six (6) structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, or public administrative purposes; railroad and other transportation yards; cemeteries; airports; golf courses; sanitary landfills; sewage treatment facilities; water control structures; and other developed purposes.
- Other Land. Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines and borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and larger than 40 acres is mapped as Other Land.

California Land Conservation Act (Williamson Act)

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, was promulgated in California Government Code Sections 51200–51297.4 and is applicable only to specific land parcels within the State of California. The subject site is not under Williamson Act Contract.

Public Resources Code (Pub. Resource Code) Section 21060.1

Public Resource Code § 21060.1 defines agricultural land for the purposes of assessing environmental impacts using the FMMP. The FMMP was established in 1982 to assess the location, quality, and quantity of agricultural lands and the conversion of these lands. The FMMP provides analysis of agricultural land use and land use changes throughout California.

Local

Tulare County General Plan

AG-1.7 Preservation of Agricultural Lands

The County shall promote the preservation of its agricultural economic base and open space resources through the implementation of resource management programs such as the

Williamson Act, Rural Valley Lands Plan, Foothill Growth Management Plan or similar types of strategies and the identification of growth boundaries for all urban areas located in the County.

AG-1.14 Right-to-Farm Noticing

The County shall condition discretionary permits for special uses and residential development within or adjacent to agricultural areas upon the recording of a Right-to-Farm Notice (Ordinance Code of Tulare County, Part VII, Chapter 29, Section 07-29-1000 and following) which is an acknowledgment that residents in the area should be prepared to accept the inconveniences and discomfort associated with normal farming activities and that an established agricultural operation shall not be considered a nuisance due to changes in the surrounding area.

Tulare County Zoning Ordinance

The AE-20 Zone is an exclusive zone for intensive agricultural uses and for those uses which are a necessary and integral part of the agricultural operation. The purpose of this zone is to protect the general welfare of the agricultural community from encroachments of unrelated agricultural uses which, by their nature, would be injurious to the physical and economic well-being of the agricultural community. It is also the purpose of this zone to prevent or to minimize the negative interaction between various agricultural uses. A related purpose of this zone is to disperse intensive animal agricultural uses to avoid air, water, or land pollution otherwise resulting from compact distributions of such uses. The minimum parcel size permitted to be created in this zone is, with certain exceptions, twenty (20) acres.

3.5.2.3 Impact Analysis

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The proposed project site is identified by FMMP as Prime Farmland on the Tulare County Important Farmland 2016 Map [Ca. Department of Conservation, Division of Land and Resource Protection (DLRP)]. Based on the DLRP Land Conversion Table A-44 (2012), Tulare County has 368,527 acres of Prime Farmland. The proposed project site is located on property designated as Valley Agriculture (Rural Lands Plan) in the Tulare County 2012 General Plan. Consistent with the Tulare County General Plan Framework Concept 4: Natural and Cultural Resources of the Tulare County General Plan (Tulare County 2012), the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques. Additionally, the Tulare County General Plan Environmental Resource Management (ERM-3.3, 3.4 and 3.5) states that the County shall allow oil and gas extraction activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land. Once the well has been plugged and abandoned at the proposed project site, the disturbed non-native grassland area would be restored to substantially the same conditions as existed prior to construction of the project.

Therefore, the proposed project would have a less than significant impact on the conversion of Prime Farmland.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The proposed project site is not included under a Tulare County Williamson Act Contract. The proposed project site is located on property designated as Valley Agriculture (Rural Lands Plan) in the Tulare County 2012 General Plan. No impact.

c) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use, or conversion of forest land to non-forest use?

The proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. The project would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance Farmland (Farmland), to non-agricultural use, or conversion of forest land to non-forest use. No impact.

d) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104 (g))?

No forest resources are located within the proposed project site and the proposed project site is not zoned for timber harvest. No impact.

e) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No forest resources are located within the proposed project site and the proposed project site is not zoned for timber harvest. No impact.

3.5.2.4 Mitigation Measures

No significant impacts were identified. No mitigation necessary.

3.5.2.5 References

California Department of Conservation, Division of Land and Resource Protection. *Farmland Mapping & Monitoring Program*. Accessed in 2019.

Website: <https://www.conservation.ca.gov/dlrp/fmmp/Pages/Tulare.aspx>

----. Tulare County *Williamson Act Program*. Accessed in 2019.

Website: <https://databasin.org/datasets/ed5964cbafe54ffeb9f70a6bc6d38263>

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online:

<http://generalplan.co.tulare.ca.us/>

SECTION 3.5.3 – Air Quality

ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
AIR QUALITY <i>Would the project:</i>				
a. Conflict with or obstruct implementation of the applicable air quality plan?	_____	X	_____	_____
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	_____	X	_____	_____
c. Expose sensitive receptors to substantial pollutant concentrations?	_____	_____	X	_____
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	_____	_____	X	_____

3.5.3.1 Environmental Setting

The proposed project lies within the south-central portion of the San Joaquin Valley Air Basin (SJVAB), which is the second largest air basin in the state. The SJVAB encompasses eight (8) counties; San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the western portion of Kern. The SJVAB is managed by the San Joaquin Valley Unified Air Pollution Control District (SJVAPCD or Air District) and is defined by the Sierra Nevada Mountains in the east, the Coast Ranges in the west, and the Tehachapi Mountains in the south. These surrounding mountains serve to confine or “trap” air pollution. The southern San Joaquin valley is characterized by low wind speed, and hot sunny weather which is conducive to the formation of ozone (smog).

The San Joaquin Valley Basin (SJVAB) is designated as non-attainment for both state and federal eight-hour ozone air quality standards. The SJVAB is designated as non-attainment for state PM-10 and non-attainment for PM-2.5 for both state and federal PM-2.5 air quality standards.

Specifically, the attainment status is as follows:

Ozone

Federal 8-Hour

Non-Attainment

State 1-Hour	Non-Attainment
State 8-Hour	Non-Attainment
PM-10	
Federal 24-Hour	Attainment
State 24 -Hour	Non-Attainment
PM-2.5	
Federal 24-Hour	Non-Attainment
State 24-Hour	Non-Attainment

PM Plans

Particulate matter (PM) is a mixture of solid particles and liquid droplets in the air. The size of PM is directly linked to potential health problems. EPA has set federal standards for PM10 (PM that is 10 microns or less in diameter) and PM2.5 (PM that 2.5 microns or less in diameter. Health research has also documented health effects of ultrafine particles, or particles that are 0.1 microns or smaller.

The chemical composition of PM is also a factor in the type and severity of health impacts. PM can be emitted directly into the atmosphere, or it can form in the atmosphere through the photochemical reactions of precursors. There are several PM species, or chemical compounds, including organic carbon, elemental carbon, geologic material, trace metals, secondary organic aerosols, ammonium nitrate, and ammonium sulfate

The District has adopted the following Plans to bring the region into compliance with state and federal ambient air quality standards.

- 2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards
The District adopted the 2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards on November 15, 2018. This plan addresses the EPA federal 1997 annual PM2.5 standard of 15 µg/m³ and 24-hour PM2.5 standard of 65 µg/m³; the 2006 24-hour PM2.5 standard of 35 µg/m³; and the 2012 annual PM2.5 standard of 12 µg/m³.
- 2016 Moderate Area Plan for the 2012 PM2.5 Standard
The District adopted the 2016 Moderate Area Plan for the 2012 PM2.5 Standard on September 15, 2016. This plan addresses the EPA federal annual PM2.5 standard of 12 µg/m³, established in 2012. This plan includes an attainment impracticability demonstration and request for reclassification of the Valley from Moderate nonattainment to Serious nonattainment.
- 2015 Plan for the 1997 PM2.5 Standard
The District adopted the 2015 Plan for the 1997 PM2.5 Standard on April 16, 2015. This plan addresses EPA's annual PM2.5 standard of 15 µg/m³ and 24-hour PM2.5 standard of 65 µg/m³, established in 1997.

- 2012 PM2.5 Plan
The District adopted the 2012 PM2.5 Plan in December 2012. This plan addresses EPA's 24-hour PM2.5 standard of 35 µg/m³, which was established by EPA in 2006.
- 2008 PM2.5 Plan
The District adopted the 2008 PM2.5 Plan in April 2008. This plan addresses EPA's annual PM2.5 standard of 15 µg/m³, which was established by EPA in 1997.
- 2007 PM10 Maintenance Plan
The District adopted the 2007 PM10 Maintenance Plan in September 2007 to assure the San Joaquin Valley's continued attainment of EPA's PM10 standard. EPA designated the Valley as an attainment/maintenance area for PM10.

Ozone Plans

The main sources of ozone precursors, nitrogen oxides (NO_x) and reactive organic gases (ROG), also commonly referred to as volatile organic compounds (VOC), in the San Joaquin Valley are produced by cars and trucks. Based on the 2016 projected emissions inventory from the California Air Resources Board (CARB) for the San Joaquin Valley, cars and trucks contribute 86.1% of the NO_x emissions and 27.7% of the ROG emissions. Stationary sources contribute 11.4% of the NO_x emissions and 26.2% of the ROG emissions. Oil and gas production release 0.1% of the NO_x and 3.9% of the ROG emissions.

To reduce emissions and bring the San Joaquin Valley into compliance with Federal and State ozone standards, the SJVAPCD adopted the 2007 Ozone Plan (Plan) to address the 1997 standard of 84 parts per billion (ppb). This Plan was reviewed and approved by CARB and the federal Environmental Protection Agency (EPA). The Plan was formally adopted by the SJVAPCD through a public review process in 2007. Details of the plan can be found on line at: http://www.valleyair.org/Air_Quality_Plans/Ozone_Plans.htm

The 2007 Ozone Plan was supplemented by adopting four (4) additional Plans. In 2009 and again in 2014, the SJVAPCD adopted the Reasonably Available Control Technology (RACT) Demonstration State Implementation Plan (SIP) for sources that may not be subject to the Best Available Control Technology (BACT) requirements. This further reduces ozone precursor emissions and furthers progress towards attaining the ozone standard. In 2016, the SJVAPCD adopted the 2016 Plan for the 2008 8-Hour Ozone Standard (2016 Ozone Plan) to address the 2008 standard of 75 ppb. This Plan was reviewed and approved by CARB and the EPA.

Consistent with the 2016 Ozone Plan, the SJVAPCD has adopted an aggressive set of policies, rules and regulations that include the adoption of indirect source review (ISR) and the nation's most stringent limits on NO_x emissions from boilers, heater and IC engines. The following rules are aimed at reducing emissions from oil and gas production:

- Rule 4306 – Reduction of NO_x from boilers, heaters, and steam generators
- Rule 4624 – Transfer of organic liquids
- Rule 4702 – Limits on NO_x emissions from IC engines

Collectively, these policies are reducing NO_x and ROG emissions. See attached forecast of NO_x emissions in San Joaquin Valley for the period 2005 thru 2023. This forecast appears as Figure ES-5 in the Executive Summary for the 2016 Ozone Plan, dated June 16, 2016. The proposed project would comply with the 2016 Ozone Plan and the above noted rules.

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. These regulated air pollutants are known as “criteria air pollutants” and are categorized into primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Primary air pollutants include; carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_x), sulfur dioxide (SO₂), coarse inhalable particulate matter (PM₁₀), fine inhalable particulate matter (PM_{2.5}), and lead (Pb).

Secondary criteria pollutants are formed from VOC and NO_x through chemical and photochemical reactions in the atmosphere. Ozone (O₃) and nitrogen dioxide (NO₂) are the principal secondary pollutants. Other pollutants, such as carbon dioxide (CO₂), a natural by-product of animal respiration that is also produced in the combustion process, have been linked to such phenomena as global climate change. A discussion of CO₂ and GHGs is included in Section 3.5.7, Greenhouse Gas Emissions.

Some land uses are considered more sensitive to air pollution than others due to the types of population groups present or activities involved. The SJVAPCD defines sensitive receptors as locations where there are human populations and where there is a reasonable expectation of continuous human exposure according to the averaging period for the ambient air quality standards (AAQS). The most sensitive portions of the population are children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases. Residential areas are considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. None of these types of facilities are located in the immediate vicinity of the proposed project site. The nearest residence to the proposed project site is located 1.01 miles to the northwest.

The SJVAPCD has established Thresholds of Significance¹: Criteria for Determining Environmental Significance. These thresholds separate a project’s short-term emissions from its long-term emissions. Short-term emissions are mainly related to the construction phase of the project and are recognized to be short in duration. Long-term emissions are primarily related to activities that would occur indefinitely as a result of project operations.

A producing well will result in operational emissions, which have the potential to contribute to the possible violation of an existing air quality standard or an existing or projected air quality violation. Sources of operational emissions include fugitive emissions from the well, some storage tanks, piping, separators, and loading racks and point source emissions from the emergency flare. Note that in an emergency, excess gaseous well emissions will be routed to the emergency flare. Indirect

¹ SJVAPCD (rev. 2015) “Guide for Assessing and Mitigating Air Quality Impacts”, Section 8.3.

operational emissions include vehicle trips associated with employees and contractors needed to operate and maintain the oil production operation.

The installation of the above equipment is subject to permit requirements (Regulation II) of the SJVAPCD. One major requirement is that new and modified equipment satisfy the requirements of New Source Review (NSR) as stipulated under Regulation II, Rule 2201.

This Rule requires that best available control technology (BACT) be used to minimize emissions before a permit is issued. Section 4.5 of Rule 2201 further requires that emissions above certain annual thresholds must be offsets. The threshold for offsets is 20,000 lbs/yr for NO_x and VOCs and 29,200 lbs/yr for PM-10. Collectively, the use of BACT and emission offset requirement effectively limits emissions from producing wells to the maximum extent possible.

These requirements are intended to allow for economic growth but not interfere with the SJVAPCD's efforts to achieve or maintain attainment with ambient air quality standards.

3.5.3.2 Regulatory Setting

Federal

U.S. Environmental Protection Agency (EPA)

The 1977 Federal Clean Air Act (CAA) and 1990 revisions require EPA to identify National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare. In June of 1997, EPA adopted new National PM₁₀ standards and an additional standard for suspended particulate matter at or below PM₁₀ to PM_{2.5}.

Pursuant to the 1990 CAA Amendments (CAAA), EPA classified air basins (or portions thereof) as either attainment or nonattainment areas for each criteria air pollutant based on whether the NAAQS have been achieved. The CAA also required each state to prepare an air quality control plan (State Implementation Plan [SIP]). The 1990 amendments additionally required states containing areas that violate NAAQS to revise their SIPs to incorporate additional control measures to reduce air pollution. EPA has the responsibility to review all SIPs to determine if they conform to the mandates of the CAAA and would achieve air quality goals when implemented.

Regulation of Toxic Air Contaminants (TACs) under state regulations or Hazardous Air Pollutants (HAPs) under federal regulations is achieved through federal and State controls on individual sources. Federal law defines HAPs as non-criteria air pollutants with short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects. The 1977 CAA required EPA to identify National Emission Standards for Hazardous Air Pollutants (NESHAPs) to protect public health and welfare.

The 1990 CAAA offer a technology-based approach to reducing air toxics. Since the CAAA were approved, 188 chemicals have been designated as HAPs and are regulated under a two-phase strategy. The first phase involves requiring facilities to install Maximum Achievable Control Technology (MACT), which includes measures, methods, and techniques—such as

material substitutions, work practices and operational improvements—aimed at reducing toxic air emissions. MACT is the lowest emission rate, or highest level of control demonstrated, on average by the top performing companies (top 12%) in the source category. MACT standards already exist for the 174 source categories: 166 major sources and 8 area sources. Under the air toxics program, facilities having similar operating processes are grouped into categories. These MACTs were promulgated in four “bins” of years: 1992, 1994 (39 categories), 1997 (62 categories), and 2000 (67 categories). As of August 2003, MACT standards have been made for 174 source categories and their subcategories.

State

California Air Resources Board

The CARB, a department of the California Environmental Protection Agency (Cal/EPA), oversees air quality planning and control throughout California by administering the SIP. CARB’s responsibilities lie in ensuring implementation of the 1989 amendments to the CCAA, the Federal CAA requirements, and setting and regulating air quality standards in the state.

The amendments to the CCAA establish the CAAQS and a legal mandate to achieve these standards by the earliest practical date. These standards apply to the same criteria pollutants as the Federal CAA; they also include sulfate, Visibility Reducing Particles (VRPs), H₂S, and vinyl chloride. They are also more stringent than the National standards. The SJVAB is designated as a nonattainment area for the State O₃ and PM₁₀ standards. Concentrations of all other pollutants meet State standards.

CARB is also responsible for regulations pertaining to TACs. Assembly Bill (AB) 2588 was enacted in 1987 as a means to establish a formal air toxics emission inventory risk quantification program. AB 2588, as amended, establishes a process that requires stationary sources to report information regarding the types and quantities of certain substances that their facilities routinely release into the SJVAB. Each air pollution control district ranks the data into high, intermediate, and low priority categories. When considering the ranking, the potency, toxicity, quantity, volume, and proximity of the facility to receptors are given consideration by an air district.

CARB also has on- and off-road engine emission-reduction programs that would indirectly affect the proposed project’s emissions through the phasing in of cleaner on- and off-road engines. In addition, engines and associated equipment can be registered under the State’s Portable Equipment Registration Program (PERP) which allows the use of portable equipment statewide. This program also imposes strict limits on emissions before the units are issued statewide registration.

The State recently enacted a new regulation for the reduction of diesel particulate matter and criteria pollutant emissions from in-use off-road diesel-fueled vehicles (CCR, Title 13, Article 4.8, Chapter 9, § 2449). This regulation provides target emission rates for particulate matter and NO_x emissions for owners of fleets of diesel-fueled off-road vehicles. It applies to equipment fleets of three (3) specific sizes, and the target emission rates are reduced over time.

Title V and Extreme Designation

Title V of the CAA, as amended in 1990, creates an operating permits program for certain defined sources. In general, owner/operators of defined stationary sources that emit more than 25 tons per year (tpy) of NO_x and ROG must possess a Title V permit. Title V is a federally enforceable state operating permit that is required under 40 C.F.R., Part 70. The Title V programs are developed at the state or local level, as outlined in 40 C.F.R. 70.

Under the extreme definition, the definition of a major source subject to Title V permitting changes from 25 tpy to 10 tpy, which results in more businesses having to comply with Title V permitting requirements under the extreme nonattainment designation. Title V does not impose any new air pollution standards, require installation of any new controls on the affected facilities, or require reductions in emissions. Title V does enhance public and EPA participation in the permitting process and requires additional recordkeeping and reporting by businesses, which results in significant administrative requirements.

Within the entire SJVAB, which includes eight (8) counties, the District estimates that with reclassification to extreme non-attainment, an additional 150 businesses (excluding agricultural facilities) would become subject to Title V. Currently, under the severe classification, approximately 270 facilities are subject to Title V. Currently a total of approximately 7,000 facilities are under permit with the District basin-wide. The proposed project is not subject to Title V.

Regional

San Joaquin Valley Unified Air Pollution Control District

On March 19, 2015, the District prepared its Guide for Assessing and Mitigating Air Quality Impacts GAMAQI (2015). The GAMAQI is a guidance document that provides lead agencies, consultants, and project applicants with analysis guidance and uniform procedures for addressing air quality in environmental documents. Local jurisdictions are not required to use the methodology outlined therein. The GAMAQI describes the criteria that the District uses, when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for determining significance, identifies methodologies for quantifying project emissions and determining impacts, and identifies measures that can be used to avoid or reduce air quality impacts. The GAMAQI includes guidance for analysis for criteria pollutants, particulates, hazardous air pollutants, and odors for both construction and operations of a project.

San Joaquin Valley Unified Air Pollution Control District—Air Quality Plans

There are currently four (4) applicable attainment plans for the SJVAB. These are described in the following.

One-hour Extreme Ozone Attainment Demonstration Plan

In 1990, the CAA classified the SJVAB as having a serious nonattainment status for the 1-hour

O₃ standard and was given an attainment date of November 15, 1999. When the SJVAPCD failed to attain that standard, EPA reclassified the SJVAB from serious to severe status effective December 10, 2001. The final notice of reclassification set a new attainment deadline of November 15, 2005. This required a new SIP by May 31, 2002. After considerable discussion and public input, the SJVAPCD board decided to request an extreme designation ahead of a formal EPA decision stating that the basin failed to attain the standard by 2005.

On April 8, 2004, the EPA's regional administrator signed a final rule that granted the State of California's request to reclassify the SJVAB nonattainment area from severe to extreme for the National 1-hour Ozone Standard. With the extreme designation, the new attainment date for the valley was revised to 2010. CARB submitted the 2004 Extreme Ozone Attainment Demonstration Plan to EPA on schedule on November 15, 2004.

In 2005, EPA revoked the 1-hour federal ozone standard. SJVAPCD has continued to work towards reducing emissions to meet the revoked 1-hour federal ozone standard. This effort resulted in the 2013 Plan for the Revoked 1-Hour Ozone Standard.

As a direct result of these efforts, the number of violations of the 1-hour Ozone standard has continued to decline from 281 in 1996 to 7 in 2012 to zero in 2013. The District will request the EPA to formally change the classification of the SJVAB from extreme to attainment for the revoked 1-hour ozone standard.

Eight-Hour Serious Ozone Attainment Demonstration Plan

In 2005, the EPA revoked the 1-hour ozone standard based on evidence that the 84 ppb 8-hour ozone standard adopted in 1997 was more health protective. In response, the SJVAPCD and other agencies nationwide shifted their ozone efforts to address 8-hour ozone.

In June of 2004, the EPA designated the SJVAB as serious nonattainment for the 8-hour ozone standard. The SJVAPCD adopted the *2007 Ozone Attainment Demonstration Plan* to address the federal 8-hour ozone standard. This Plan was further updated in 2016.

The 2007 Plan considers a four-faceted control strategy consisting of: 1) Regulatory Control Measures for Stationary Sources; 2) Incentive-based Strategies; 3) Innovative Strategies and Programs; and 4) Local, State and Federal Sources/Partnerships. In order to attain the federal 8-hour ozone standard, it is anticipated NO_x emissions in the SJVAB would need to be reduced by 75% of their 2005 levels. A 2010 Mid-Course Review of the 2007 Ozone Plan shows the SJVAPCD has achieved more emission reductions than originally projected at the time of plan adoption. While the goal is to attain the federal 8-hour ozone standard by 2017, SJVAPCD is required to attain the 8-hour standard by 2024.

In 2008, the EPA revised the 8-hour ozone standard from 84 ppb (in 1997) to 75 ppb. The EPA has designated the SJVAB as nonattainment for the 2008 8-hour ozone standard. The Clean Air Act (CAA) requires areas that are classified as moderate or above for ozone nonattainment to adopt a reasonably available control technology (RACT) demonstration that verifies RACT levels of control are being implemented for sources subject to U.S. Environmental Protection

Agency (EPA) Control Techniques Guidelines (CTG) and for “major sources” 2 of relevant ozone precursors.

The District submitted (on April 16, 2009) the 2009 RACT SIP to control NO_x and VOC emissions and help bring the region into attainment. This submittal was updated on June 19, 2014 Reasonably Available Control Technology Demonstration for the 8-Hour Ozone State Implementation Plan (2014 RACT SIP) that fulfills CAA requirements and demonstrates that all federal RACT requirements continue to be satisfied in the Valley.

Particulate Matter Less than 10 Microns or Less in Diameter Attainment Demonstration Plan

The District adopted the *2007 PM₁₀ Maintenance Plan* in September 2007 to assure San Joaquin Valley’s continued attainment of EPA’s PM₁₀ standard. EPA designated the San Joaquin Valley as an attainment/maintenance area for PM₁₀. On the basis of the progress made by the District, the San Joaquin Valley is not designated as Attainment for the federal 24-hour PM-10 standard.

This *2007 PM₁₀ Maintenance Plan* also aids the District in meeting the more stringent California’s 24-hour PM-10 standard of 50 micrograms per cubic meter as compared to the 150 (ug/m³) federal standards.

Modeling for the *2007 PM₁₀ Maintenance Plan* is required to demonstrate that projected emission inventory changes will not cause any site in the San Joaquin Valley to fail the NAAQS compliance tests. Evaluation of future emissions growth and control up to the year 2020 were evaluated for the *2007 PM₁₀ Maintenance Plan and Request for Redesignation*. The 2007 PM₁₀ Maintenance Plan was updated in May 17, 2017 that documented the nature and causes of PM₁₀ exceedances and identifies actions underway to ensure continued maintenance of the PM₁₀ standard.

Particulate Matter Less than 2.5 Microns or Less in Diameter Attainment Status

Based on the health studies conducted, PM_{2.5} is considered to be more adverse to human health than other pollutants. In July 1997, EPA set two PM_{2.5} standards: a 24-hour standard set at 65 micrograms per cubic meter (µg/m³) to protect against short-term health impacts and a 12-month (annual) standard set at 15 µg/m³ to protect against longer term impacts. The SJVAB has been designated a nonattainment area for the PM_{2.5} standards.

The California Air Resources Board (ARB) approved the District’s *2012 PM_{2.5} Plan* on January 24, 2013. The plan, approved by the District Governing Board on December 20, 2012, will bring the Valley into attainment of EPA’s 2006 PM_{2.5} standard by the 2019 deadline, with most areas seeing attainment well before then. This plan builds upon the comprehensive strategy adopted in the *2007 Ozone Plan* and *2008 PM_{2.5} Plan* to bring the SJVAB into attainment of the NAAQS for PM_{2.5}.

The 2012 Plan was followed by the 2018 PM_{2.5} Plan that was released Dec 21, 2018 and sets forth a comprehensive strategy to meet four National Ambient Air Quality Standards for PM_{2.5} for which the San Joaquin Valley is in nonattainment: the 1997 24-hour standard of 65

micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), the 1997 annual standard of $15 \mu\text{g}/\text{m}^3$, the 2006 24-hour standard of $35 \mu\text{g}/\text{m}^3$, and the 2012 annual standard of $12 \mu\text{g}/\text{m}^3$. Attainment deadlines for the 1997, 2006, and 2012 PM_{2.5} standards are 2020, 2024, and 2025, respectively.

San Joaquin Valley Unified Air Pollution Control District—Local Control Measures

The SJVAPCD requires all local governments within its eight (8)-county jurisdictions to adopt resolutions as part of the Extreme Ozone Attainment Demonstration Plan that must be approved by EPA. The resolutions describe the reasonably available control (RACT) measures that each jurisdiction would implement to reduce O₃-causing emissions into the air from transportation sources. Local jurisdictions are also required to adopt best available control technology (BACT) measures to reduce particle emissions as part of the PM₁₀ Area Attainment Demonstration Plan. This process is coordinated and assisted by regional transportation planning agencies.

The SJVAPCD has primary responsibility for regulating stationary sources of air pollution situated within its jurisdictional boundaries. To this end, the SJVAPCD implements air quality programs required by State and Federal mandates, enforces rules and regulations based on air pollution laws, and educates businesses and residents about its role in protecting air quality. The SJVAPCD is also responsible for managing and permitting existing, new, and modified sources of air emissions within the SJVAB and establishing the following rules and regulations to ensure compliance with local, State, and National air quality regulations.

District Rule 2010: Permits Required

The purpose of this rule is to require any person constructing, altering, replacing, or operating a source operation that emits, may emit, or may reduce emissions to obtain an Authority to Construct (ATC) permit and a Permit to Operate (PTO).

District Rule 2020: Exemptions

Rule 2020 specifies criteria that emission units must meet to be exempt from SJVAPCD permit requirements. The rule also specifies the recordkeeping requirements to verify the exemption and outlines the compliance schedule for emission units that lose the exemption after installation. Rule 2020 applies to any source that emits or may emit air contaminants.

District Rule 2070: Exemptions

Rule 2070 sets forth the standards that must be met for a permit to be issued by the SJVAPCD. The rule applies to any activity required to obtain a permit according to Rule 2010 (permits required).

District Rule 2201: New Source Review

The stated purpose of Rule 2201 is to provide for the review of new and modified stationary sources of air pollution and to provide mechanisms including emission trade-offs by which authority to construct such sources may be granted without interfering with the attainment or

maintenance of ambient air quality standards. The SJVAPCD new source review rule (NSR) applies to new stationary sources and all modification to existing stationary sources which are subject to District permit requirements. The rule generally requires that new or modified equipment include Best Available Control Technology (BACT) and the emission increase above specified thresholds be offset.

District Rule 4101: Visible Emissions

Rule 4101 limits the opacity of visible emissions being released into the atmosphere. The rule applies to any source that emits or may emit air contaminants.

District Rule 4102: Public Nuisance

The purpose of Rule 4102 is to protect the health and safety of the public. The rule applies to any source operation that emits or may emit air contaminants or other materials and prohibits from any source whatsoever the discharge emissions of air contaminants or other materials that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or that endanger the comfort, repose, health, or safety of any such person or the public or that cause or have a natural tendency to cause injury or damage to business or property.

District Rule 4201: Particulate Matter Concentration

Rule 4201 establishes a particulate matter emission standard and applies to any source operation that emits or may emit dust, fumes, or total suspended particulate matter. The rule prohibits the release or discharge into the atmosphere from any single source operation, dust, fumes, or total suspended particulate matter emissions in excess of 0.1 grain per cubic foot of gas at dry standard conditions.

District Rule 4306: Boilers, Steam Generators, and Process Heaters

The purpose of this rule is to limit emissions of oxides of NO_x and carbon monoxide (CO) from boilers, steam generators, and process heaters. This rule applies to any gaseous fuel or liquid fuel fired boiler, steam generator, or process heater with a total rated heat input greater than 5 million British thermal units (Btu) per hour.

District Rule 4642 (Solid Waste Disposal Facilities, Amended April 16, 1998)

This rule is intended to reduce VOC emissions from solid waste disposal sites. The rule applies to any solid waste disposal site which has a gas collection system. The rule requires that the gas collection system be operated in such a manner as to prevent fugitive VOC emissions from the disposal site surface, from exceeding 1,000 parts per million by volume (ppmv) (as methane).

District Rule 4702: Internal Combustion Engines

The purpose of this rule is to limit the emissions of NO_x, CO, VOC, and sulfur oxides (SO_x) from internal combustion engines. This rule applies to any internal combustion engine rated at 25

brake horsepower or greater.

District Rule 4801: Sulfur Compounds

Rule 4801 limits the emission of sulfur compounds and applies to any discharge to the atmosphere of sulfur compounds that would exist as a liquid or a gas at standard conditions. The rule prohibits the discharge of sulfur compounds into the atmosphere in concentrations greater than 2,000 ppmv as SO₂ on a dry basis averaged over 15 consecutive minutes.

District Regulation VIII—Fugitive PM₁₀ Prohibitions

Rules 8011–8081 are designed to reduce PM₁₀ emissions (predominantly dust/dirt) generated by human activity, including construction and demolition, road construction, bulk materials storage, use to the proposed project are the following:

- Rule 8011—General Requirements.
- Rule 8021—Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities.
- Rule 8031—Bulk Materials.
- Rule 8041—Carryout and Track out.
- Rule 8051—Open Areas.
- Rule 8061—Paved and Unpaved Roads; and
- Rule 8071—Unpaved Vehicle/Equipment Traffic Areas.

Local

Tulare County General Plan

The Air Quality Element of the 2030 Update of the Tulare County General Plan includes policies and implementation measures concerning air quality. The policies and implementation measures in the General Plan applicable to the proposed Project are Air Quality (AQ)-1.1, AQ-1.2, AQ-1.3, AQ-1.4, AQ-1.5, AQ-1.6, AQ-1.7, AQ-1.8, AQ-4.1, AQ-4.2 and AQ-4. Section 9.5 *Work Plan/Implementation Measures* beginning on Page 9-13 are included to implement the goals and policies of the Air Quality Element.

3.5.3.3 Impact Analysis

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

The SJVAPCD adopted the Air Quality Attainment Plan (AQAP) to enable the San Joaquin Valley to attain federal and State air quality standards by the earliest practicable date. Short-term emission impact is anticipated as part of the proposed project. Short-term emission impacts include particulate matter emissions that are expected to occur from daily ingress and egress of vehicles on the unpaved access roads. The proposed project may also produce exhaust emissions resulting from transportation of workers and machinery to and from the

proposed project site as well as operation of equipment on-site. Typical equipment used for this project may include diesel drill rig, bulldozer, grader, loader, compacter, heavy-duty trucks, baker tanks, air compressors, pumps, and generators. These emissions would add pollutants to the San Joaquin Valley air basin for which it is currently in nonattainment.

However, earthmoving activities at the proposed project site would not exceed the non-residential project limit of 5.0 or more acres per day and would not move, deposit, or relocate more than 2,500 cubic yards per day of bulk materials on at least three (3) days. Therefore, a Dust Control Plan would not be required (Regulation VIII, Rule 8021, Section 6.3.1). The operator would provide written notification to the SJVAPCD at least 48 hours prior to beginning earthmoving operations as required.

Short-term project related emissions may impact implementation of the SJVAPCD's AQAP, but with implementation of **Mitigation Measures AQ-1 through AQ-6** as part of the proposed project, it would reduce project related impacts to less than significant impact. The proposed project would not significantly conflict, in the long-term, with or obstruct implementation of the SJVAPCD Air Quality Attainment Plan.

Booher Consulting, LLC prepared emissions calculations to determine the quantity of following category of air pollutants:

- Criteria Air Pollutants (ROG, NO_x, PM-10, PM-2.5)
- Toxic Air Contaminants (TACs)
- Greenhouse Gases (GHG) – GHG emissions are discussed in Section 3.5.7
Greenhouse Gas Emissions

Estimate of Criteria Air Pollutant Emissions

Fugitive dust emissions (PM-10) associated with site preparation were estimated using Road Construction Emissions Model, Version 8.1.0 software, which is recommended by the SJVAPCD for use in calculating air emissions for this type of project since it involves release of fugitive dust emissions from site work (grading, trenching, etc.). For equipment and vehicular emissions associated with all phases of the proposed project (site preparation, drilling, completion and testing, production equipment installation, production and plugging and abandonment phases) the emissions are entirely due to equipment and vehicular exhaust. Emissions of criteria pollutant from equipment and mobile sources were calculated using OFFROAD and EMFAC 2017 emission factors for various type and size (horsepower) of equipment and for the duration of each phase.

The proposed project's phases and the corresponding duration follows:

- | | |
|--------------------------------|-----------|
| • Pre-activity Surveys | 1 day |
| • Site Preparation | 3 days |
| • Drilling phase | 10.5 days |
| • Completion and Testing phase | 183 days |

- Installation of Production Equipment 5 days
- Production phase 365 days/year
- Plugging and Abandonment phase 5 days

Equipment for each phase of the project is summarized in Tables 2.3.1-1, 2.3.2-1, 2.3.3-1, 2.3.4-1, 2.3.5-1, 2.3.5-2, and 2.3.6-1 in Section 2 Project Description.

Estimate of Criteria Air Pollutant

Tables 3.5.3.3-1 and 3.5.3.3-2 summarizes the tons per year of criteria pollutant emissions that would be produced by site preparation of one (1) well site and the drilling, completion and testing, production equipment installation, production, and plugging and abandonment phases for one (1) well. Table 3.5.3.3-1 presents emissions from the following four categories of emission sources.

(1) On-site Equipment

On-site equipment such as drill rigs, work-over rigs, generators, pumps, etc., use diesel fuel and emit ROG, NO_x, PM-10 and PM-2.5. These emissions occur during the drilling and production phases. Emission rates of these air pollutants are based on emission and load factors (OFFROAD Model for CY 2020).

(2) Mobile Sources

This category includes automobiles, light trucks, and heavy-duty trucks. The heavy-duty trucks are used to transport oil, water, and supplies. Tailpipe emissions include ROG, NO_x, PM-10 and PM-2.5. This category also includes emissions during on-site truck idling. Emission rates are calculated using the EMFAC 2017 emissions model for mobile sources.

(3) Flares

Flares are used to combust any waste gases during the testing and production phases. The waste gases may include methane and other toxic gases. The typical destruction efficiency of modern flares is over 95%. As a result, flares serve as effective emission control devices preventing gases that include methane from being released into the atmosphere. Flares release both criteria and TACs such as formaldehyde. Emission rates of criteria air pollutants are based on emission factors developed by the EPA. TAC emissions are based on District recommended emission factors and are discussed later in this section.

(4) Fugitive Emissions

Fugitive emissions refer to organic vapor losses from tanks, pipes, valves, etc. These emissions are considered as ROG and are released from oil and water tanks. Current SJVAPCD regulations require that tanks be equipped with either a flare or a vapor recovery system if emissions exceed 2 lbs/day. For the tanks used on this project, it was conservatively assumed that emissions from each tank were 2 lbs/day or 730 lbs/yr per tank or 2,190 lbs/yr for all three (3) tanks.

A breakdown of emissions from 2020 to 2021 is shown in Tables 3.5.3.3-1, 3.5.3.3-2, and 3.5.3.3-3. It is possible that the drilling and production schedule may be delayed. The net

result would be that emissions are shifted to a later time. The emissions presented would not change but would be shifted to a later time. Detailed calculations are presented in Appendix B.

Table 3.5.3.3-1
Criteria Pollutant Emissions Rates for One (1) Well Site and One (1) Well
(Emissions below 0.00005 are reported as 0.0000)

Project Phase	ROG <i>(ton/yr)</i>	NO_x <i>(ton/yr)</i>	PM-10 <i>(ton/yr)</i>	PM-2.5 <i>(tons/yr)</i>
Pre-Activity Surveys	0.0000	0.0000	0.0000	0.0000
Site Preparation	0.0018	0.0175	0.0139	0.0036
Drilling Phase	0.0647	0.9561	0.0217	0.0173
Completion & Testing Phase	0.0473	0.8863	0.9005	0.8103
Production Equipment Installation	0.0017	0.0220	0.0008	0.0006
Production Phase	0.0297	0.1482	0.0104	0.0083
Plugging & Abandonment	0.0024	0.0206	0.0008	0.0005
TOTAL (Short-Term / Construction)	0.1179	1.9025	0.9377	0.8323
Total Production Emissions	0.0297	0.1482	0.0104	0.0083

Note: All equipment will use ultra-low sulfur diesel fuel. As a result, SO_x emissions will be negligible.

**Table 3.5.3.3-2
Summary of Emissions – 2020 to 2021**

		2020												2021																			
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D								
Phase	Duration (days)																																
Site Prep Drilling/Testing Plugging and Abandonment	208	208 Days (6 months)																															
Production	365													6 Months						12 months													
Drilling/Site Prep/Plugging/Abandonment Production		ROG				NO _x				PM-10				PM-2.5				ROG				NO _x				PM-10				PM-2.5			
		0.118				1.903				0.938				0.832				0.030				0.148				0.010				0.008			
		0.015				0.074				0.005				0.004																			
Total		0.133				1.977				0.943				0.836				0.030				0.148				0.010				0.008			
Note: Emissions below 0.0004 appear as 0.000.																																	

Project Impacts from Criteria Air Pollutants

SJVAPCD has established thresholds of significance for several criteria air pollutants. The thresholds of significance are in terms of annual tons of PM-2.5, PM-10, ROG, and NO_x. CEQA Guidelines Section 15064.7 authorizes a lead agency to adopt thresholds of significance or use thresholds adopted by another agency to determine the significance of a project's impacts.

A comparison of project emissions with the adopted thresholds of significance is presented in Table 3.5.3.3-3. As data in Table 3.5.3.3-3 shows, the proposed project impacts for 2020 and 2021 are below the thresholds of significance. After 2021, assuming the proposed well is placed into production, the annual operational emissions would continue to be below the thresholds of significance. Consequently, the proposed project would have a less than significant impact with respect to violating air quality standards.

**Table 3.5.3.3-3
Comparison of Project Emissions with
District Significance Thresholds (2020 to 2021)**

Air Pollutant	Threshold (tons/yr)	2020		2021	
		Construction	Production	Construction	Production
Reactive Organic Gas (ROG)	10	0.1179	0.0150	0.000	0.0297
Nitrogen Oxides (NO _x)	10	1.9028	0.0740	0.000	0.1482
Particulates (PM ₁₀)	15	0.9377	0.0050	0.000	0.0104
Particulates (PM ₁₀)	15	0.8323	0.0040	0.000	0.0083

Engines and generators used during for the proposed project would be registered under the CARB's Portable Engine Registration Program, a voluntary program part of the CARB's Airborne Toxic Control Measure designed to address particular matter emissions from portable diesel fueled engines rated at 50 brake horsepower (bhp) or higher. KEBO shall comply with the Regulation VIII air emissions control measures (Tables 6-2 and 6-3) in the SJVAPCD's GAMAQI to control dust (PM₁₀) and other emissions during construction.

The proposed project includes the use of equipment that may contribute to or violate air quality standards. The proposed project will comply with SJVAPCD Regulation VIII Fugitive Dust Rules (in particular, Rule 8021-Construction, demolition, excavation, and extraction) and Rule 8031 – transportation of bulk materials. All engines used shall be maintained in compliance with the U.S. Environmental Protection Agency (U.S. EPA) and the CARB engine standards. With the implementation of **Mitigation Measures AQ-1 through AQ-6**, the proposed project would have a less than significant impact on air

quality, including cumulative air quality.

SJVAPCD Rule 2280 Portable Equipment Registration for certain portable emissions units shall be required for well drilling, service or work-over rigs, pumps, compressors, generators, and field flares.

Under SJVAPCD CEQA guidance, the implementation of these control measures, in combination with **Mitigation Measures AQ-1 through AQ-6**, will reduce impacts from criteria air pollutants to a less than significant level.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors?)

As discussed above, when proposed project emission estimates are compared with adopted thresholds of significance for ROG, NO_x, and PM₁₀ the conclusion is that the emissions would be below SJVAPCD thresholds of significance (Tables 3.5.3.3-3). With the implementation of **Mitigation Measures AQ-1 through AQ-6**, presented below, the proposed project will have a less than significant impact on air quality. Cumulative impacts are discussed in Section 3.5.18 Mandatory Findings of Significance.

For the purposes of this analysis, a “cumulatively considerable net increase” is defined as circumstances in which total direct emissions exceed the SJVAPCD’s applicable air district thresholds. The SJVAPCD emissions thresholds presented above represent the maximum emissions a project may generate before contributing to a cumulative impact on regional air quality. Therefore, any exceedances of project-level thresholds for criteria pollutants, as identified in Table 3.5.3.3-3, would qualify as a cumulatively considerable net increase.

The proposed project would not exceed SJVAPCD thresholds for criteria pollutants and therefore, would not result in a cumulatively considerable net increase of the criteria pollutants.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

The proposed project site is located within an unincorporated area of Tulare County. Scattered rural residences are located throughout the project area. The proposed project site would be located away from rural residences. While, rural residences are considered a sensitive receptor, the nearest residence to the proposed project site is located 1.01 miles to the northwest. This distance provides a substantial buffer between the proposed project site and the sensitive receptor.

Criteria Air Pollutant Concentrations

Proposed project activities would create criteria air pollutants that would be released to the localized area of the proposed project site. However, these pollutants would greatly disperse

prior to reaching a sensitive receptor. Due to the distance of the proposed project site from the sensitive residential receptor in the project area, and the fact that project emissions are below the thresholds of significance, the project is not expected to subject sensitive receptors to substantial pollutant concentrations.

Estimate of Toxic Air Contaminants

The SJVAPCD limits emissions of and public exposure to hazardous air pollutants (HAPs), which are also referred to in CEQA as TACs. The SJVAPCD's GAMAQI (2002) outlines procedures for lead agencies to follow for evaluating potential impacts related to TACs. Lead agencies should consider both of the following situations:

1. A new or modified source of HAPs is proposed for a location near an existing residential area or other sensitive receptor, and
2. A residential development or other sensitive receptor is proposed for a site near an existing source of HAPs.

The SJVAPCD also requires a risk prioritization under the 1987 Air Toxics 'Hot Spots' Information and Assessment Act. The SJVAPCD established the risk prioritization score threshold at which facilities are required to prepare a health risk assessment. Air quality impact analysis distinguishes between short-term and long-term emissions.

Short-term emissions are mainly related to the construction phase of the project and are recognized to be of limited duration. For the proposed project, short-term emissions are associated with site preparation, drilling, completion and testing, installation of production equipment and plugging and abandonment phases of the project.

Long-term emissions are related to activities that would occur indefinitely and often are associated with project operations (production activities). The proposed project would use 15 hp diesel fueled pumping unit during the production phase. In addition, there would be emissions would be from the operation of the work-over rig two (2) days every three years, idling heavy duty trucks that transport produced oil and fugitive emissions from tanks, pipes, and connectors.

In an effort to quantify the potential short-term risk and actual cancer risk associated with exposure to TACs released during site preparation, drilling, completion and testing, installation of production equipment and plugging and abandonment phases of the project, these activities were assessed to determine actual exposure times. Sources of TACs were reviewed as well as the quantity and duration of TAC emissions. The associated cancer risk was then estimated based on this information.

Short-Term Public Health Risks

Activities during the construction phase that can potentially release toxic air contaminants include site preparation, drilling, completion and testing, installation of production equipment and plugging and abandonment. Three (3) categories of toxic air emissions are

released during the construction phase:

1. Diesel Exhaust (from equipment)
2. Gaseous Emissions (from flare)
3. Fugitive Emissions (released during drilling)

Diesel Exhaust

The main toxic air contaminant released from use of equipment is diesel exhaust that consists of gaseous and particulate emissions. Collectively, toxic emissions contained in diesel exhaust are referred as diesel particulate matter or DPM. DPM serves as a surrogate for both gaseous and particulate emissions in diesel exhaust and by far is the largest amount of toxic air contaminant released during the construction phase. The amount of toxicity of DPM is 10 to 100 times higher than the TACs released from the flare or from fugitive emission sources.

The emission rate of DPM is the same as the emission rates of PM-10 presented earlier in Table 3.5.3.3-1, 3.5.3.3-2 and are summarized in Table 3.5.3.3-3. It is estimated that 111.7 pounds of DPM would be released during the construction phase from a single well (Appendix B – page 17).

Gaseous Flare Emissions

The operation of the flare during the completion and testing phase would release TACs and the types and amounts of such emissions have been documented by the EPA and consist of ethylene, ethane, and propane. Based on the August 18, 2018 data issued by CARB and the Office of Environmental Health Hazard Assessment (OEHHHA)², none of these compounds are regulated as carcinogens. Therefore, flare emissions are not included in the risk evaluation as these emissions do not contribute to the screening level cancer risk.

Fugitive Emissions

Trace amounts of fugitive volatile organic compounds (VOC) may also be released during the drilling, completion and testing, installation of production equipment and plugging and abandonment. The amount of VOCs, however, is very small (1% or less) as compared with the emission rate of diesel exhaust and operation of the flare. On the basis of the amount and toxicity of various TACs, the current analysis is limited to DPM only.

² “Consolidated Table of OEHHHA/ARB Approved Risk Assessment Health Values”, Available at: <https://ww3.arb.ca.gov/toxics/healthval/contable.pdf>

**Table 3.5.3.3-4
Diesel Particulate Emissions by Phase
for One (1) Well Site and One (1) Well**

Project Phase	Duration	DPM	DPM
	(days)	(lbs/day)	(lbs)
Construction Phase			
Site Preparation	3	0.833	2.499
Drilling Phase	9*	6.174	55.566
Completion/ Testing Phase	183	0.2775	50.7825
Production Equipment Installation	5	0.299	1.495
Plugging & Abandonment	5	0.273	1.365
Total Short-Term Emissions			111.708
Production Phase			
Pumping Unit	365	0.055	20.075
Production Phase Emissions (Work-over Rig 2 days/yr)	2	0.274	0.548
Truck Idling	365		
TOTAL Production (Long-Term) Emissions			20.623

*Only 9 days are considered during the drilling phase as the other day and a half, all motors are idle or not running.

Impacts to public health were estimated on the basis of the facility risk prioritization score. The spreadsheet used to estimate the facility score was obtained from the SJVAPCD. This spreadsheet calculates a screening level (very conservative) estimate of risk from a single emission source or multiple co-located emission sources. For cancer risks, a facility score of 10 or greater indicates significant public health risks. A facility score less than 10 indicates that health impacts are less than significant.

For the proposed project, the highest risk would occur at the nearest residence located 1.01 miles northwest of the proposed project site. DPM emissions from preparing one (1) well site and drilling one (1) well are estimated to be 111.7 lbs. A cancer risk score of 0.11 is considered “Low” was calculated at the nearest residence. The risk would be even lower at residences located beyond 1.01 miles. Given this low level of projected public health risk, a more refined risk analysis is not necessary.

Since the facility prioritization score is below 10, this indicates that short-term impacts associated with the proposed project would not lead to significant public health risks and that a detailed risk analysis is not required. A copy of the prioritization score is provided in Appendix B, section titled “Short Term Risk Evaluation” in the table “Score Prioritization 2.0 SJVAPCD”.

Long-Term Public Health Risks

The long-term toxic air contaminants associated with production are from fugitive emissions from three (3) categories of sources:

- (1) Production equipment (work-over rig)
- (2) HD Diesel Truck Idling
- (3) Fugitive Emissions from Tanks, Pipes and Connectors

Emissions from these sources are summarized in Appendix B. As with the short-term health risks, long term risks were calculated using the same methodology described previously.

A score of 0.02 “Low” was calculated at the nearest residence 1.01 miles away from the proposed project site (see Appendix B, section titled “Long Term Risk Evaluation”). The risk would be lower at residences located beyond 1.01 miles.

Since the facility prioritization score is well below 10, this indicates that operation of the proposed well would not lead to significant public health risks and that a detailed risk analysis is not required.

e) Would the project create objectionable odors affecting a substantial number of people?

The proposed project site is located within an unincorporated area of Tulare County. Scattered rural residences are located throughout the project area. Rural residences are considered a sensitive receptor. The nearest residence to the proposed project site is located 1.01 miles to the northwest.

Project activities may create odors, but they would only be perceptible in close proximity to the proposed project site. Due to the distance of the proposed project site from the closest residence, the project is not expected to create objectionable odors that would be noticeable at this residence. As such, the proposed project would have a less than significant impact on objectionable odors.

3.5.3.4 Mitigation Measures

In order to reduce impacts to air quality to a less than significant level, the following mitigation measures would be implemented:

AIR-1 - All disturbed areas, including storage piles, which are not being actively used for construction purposes, shall be effectively stabilized using water.

AIR-2 - Unpaved access roads shall be effectively stabilized of dust emissions using water.

AIR-3 - All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust

emissions by using the application of water or by presoaking.

AIR-4 - When materials are transported off-site, all material shall be covered, effectively wetted to limit visible dust emissions, or at least six (6) inches of freeboard space from the top of the container shall be maintained.

AIR-5 - Following addition of materials to, or removal of materials from the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions by using sufficient water.

AIR-6 - Limit traffic speeds on unpaved access roads to 15 mph.

3.5.3.5 References

California Environmental Protection Agency February 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines; The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessment*. Sacramento, CA. Available at: <https://oehha.ca.gov/air/crnrr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0>

California Environmental Quality Act (CEQA Guidelines) Sections 15000-15387. California CCR Title 14, Chapter 2.

San Joaquin Valley Unified Air Pollution Control District. Almanac Emission Projection Data (published in 2015) Estimated Annual Average Emissions for the San Joaquin Valley Unified APCD. Accessed in 2019. Available online: <http://www.arb.ca.gov/ei/emissiondata.htm>

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----. Current Rules and Regulations. Accessed 2019. Available online: <http://www.valleyair.org/rules/1ruleslist.htm>

---SJVAPCD Air Quality Plans available at:
http://www.valleyair.org/Air_Quality_Plans/Ozone_Plans.htm

----. Air Resources Board. Accessed 2019. SJVAPCD Emission Inventory. Available online: https://www.arb.ca.gov/app/emsmv/2017/emssumcat_query.php?F_YR=2012&F_SEASON=A&SP=SIP105ADJ&F_DIV=-4&F_AREA=DIS&F_DIS=SJU

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online: <http://generalplan.co.tulare.ca.us/>

SECTION 3.5.4 – Biological Resources

ISSUES	<i>Potentially Significant Impact</i>		<i>Less Than Significant with Mitigation Incorporated</i>		<i>Less Than Significant Impact</i>		<i>No Impact</i>
BIOLOGICAL RESOURCES <i>Would the project:</i>							
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	_____		X		_____		_____
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	_____		_____		_____		X
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	_____		_____		_____		X
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	_____		_____		_____		X
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	_____		_____		_____		X
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	_____		_____		_____		X

3.5.4.1 Environmental Setting

A biological assessment (BA) report was prepared for the proposed Project (Booher Consulting, LLC 2019), and is attached to this initial study/mitigated negative declaration as Appendix C. This report provides a detailed discussion of the biological resources present and potentially present within the proposed Project site. Field surveys were conducted to determine if special-status plant or animal species or suitable habitats occurred within the proposed Project site, existing access roads, proposed access roads, or buffer areas. Surveys also sought to determine if the proposed Project would have an adverse effect on these species or habitats. No valley saltbush scrub, wetlands, streams, or other sensitive habitats were identified within the boundaries of the proposed Project site.

Booher Consulting conducted biological surveys of the proposed Project site, proposed access roads, and a 500-foot buffer area around the proposed Project site to identify known or potential habitat for special-status species on August 6, 2019 and September 20, 2019. Booher Consulting, LLC found no sensitive plant or animal species present within the boundaries of the proposed Project site. Special-status species potentially occurring in the proposed Project site and locations where these species could potentially occur are presented in Table 3.5.4.1-1.

Prior to conducting biological surveys for the proposed Project and during the preparation of the BA, data files and records were reviewed from the following sources:

- United States Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC) (USFWS 2019);
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB) RareFind 5 and Biological Information and Observation System (BIOS) (CDFW 2019);
- California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2019);
- Tulare County General Plan (Tulare County 2012); and
- Soil Survey of Tulare County, California Western Part, (Wasner and Arroues 2003).

From each review, a list of special-status species was generated for species that occur in or may be affected by projects in the Richgrove USGS 7.5-minute quadrangle. Special-status species that potentially occur in this quadrangle (an area measuring approximately 70 square miles) are identified in Table 3.5.4.1-1. Each of the species identified in the database queries was evaluated in terms of its likelihood to occur within the proposed Project site and buffer areas.

**Table 3.5.4.1-1
Special-Status Species Potentially Occurring in the Proposed Project Site**

Common Name	Scientific Name	Federal Status	State Status	Habitat/Requirements	Potential to Occur in Project Site
<i>Amphibians and Reptiles</i>					
Blunt-nosed leopard lizard	<i>Gambelia sila</i>	FE	SE FP	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief. Seeks cover in mammal burrows, under shrubs or structures such as fence posts. They do not excavate their own burrows.	No Potential. Annual grassland is present in the proposed Project site and buffer area; however, no burrows suitable for potential use by this species were observed during biological surveys. The species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019). No individual blunt-nosed leopard lizards were observed during biological surveys.
California red-legged frog	<i>Rana draytonii</i>	FT	SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby, or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Must have access to aestivation habitat, consisting of small mammal burrows and moist leaf litter.	No Potential. The proposed Project site is outside the historic range and current distribution of the species.
Western spadefoot	<i>Spea hammondi</i>	--	SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	Low Potential. Potential upland aestivation habitat is present in the proposed Project site and buffer area; however, no suitable aquatic breeding habitat (vernal pools) is present. This species has been documented approximately 2.8 miles southwest of the proposed Project site (CDFW 2019). No individuals were observed during biological surveys.

**Table 3.5.4.1-1
Special-Status Species Potentially Occurring in the Proposed Project Site**

Common Name	Scientific Name	Federal Status	State Status	Habitat/Requirements	Potential to Occur in Project Site
Giant garter snake	<i>Thamnophis gigas</i>	FT	ST	A highly aquatic species that prefers fresh water marsh and low gradient streams. Has adapted to drainage ditches and irrigation canals.	No Potential. The proposed Project site is located outside the historic range and current distribution of the species.
Birds					
Lawrence's goldfinch	<i>Carduelis lawrencei</i>	BCC	SSC	Open woodlands, chaparral, and brushy areas or weedy fields. Nests in trees and feeds almost exclusively on seeds from annual plants. Breeds March 20 to September 20.	Low Potential. Lawrence's goldfinch may potentially forage in the proposed Project site or travel through during normal migration. However, no suitable nesting habitat is present in the proposed Project site or buffer area. The species has not been documented in the CNDDB in proximity to the proposed Project site (CDFW 2019) but has been recorded in various locations in Tulare County (eBird 2019). No individuals were observed during biological surveys.
Tricolored blackbird	<i>Agelaius tricolor</i>	BCC	SSC	Freshwater emergent wetlands. This highly colonial species requires open water, protected nesting substrate, and a foraging area with insect prey within a few kilometers of the colony. Breeds March 15 to August 10.	Low Potential. No wetland habitat or suitable nesting habitat is present in the proposed Project site or buffer area. However, small agricultural ponds were observed approximately 0.3 miles north of the proposed Project site, adjacent to the existing access road south of Avenue 40. This species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019). No individuals were observed during biological surveys.

Table 3.5.4.1-1
Special-Status Species Potentially Occurring in the Proposed Project Site

Common Name	Scientific Name	Federal Status	State Status	Habitat/Requirements	Potential to Occur in Project Site
Mammals					
Tipton kangaroo rat	<i>Dipodomys nitratooides nitratooides</i>	FE	SE	Saltbush scrub and sink scrub communities in the Tulare Lake Basin of the Southern San Joaquin Valley. Requires soft, friable soils which escape seasonal flooding. This species digs burrows in elevated soil mounds often at the bases of shrubs.	No Potential. No suitable habitat is present in the proposed Project site or buffer area and surrounding lands were historically converted to agricultural use. No potential burrows or sign of species presence (i.e., kangaroo rat tracks, tail drags, seed caching, etc.) was observed during biological surveys. This species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019).
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE	ST	Inhabit annual grasslands or grassy open stages with scattered shrubby vegetation. Require loose-textured sandy soils for burrowing, and a suitable prey base.	Low Potential. Potential habitat is present in the proposed Project site and buffer area. Two (2) potential dens were recorded during biological surveys; however, no sign (i.e., scat, tracks, etc.) of San Joaquin kit fox was observed in the proposed Project site or buffer area. The species has been historically documented in several locations in vicinity to the proposed Project site (see Figure 7). The nearest occurrence of San Joaquin kit fox is recorded 0.6 miles to the west/southwest, in a parcel that has since been converted to agricultural use (CDFW 2019).
Invertebrates					
Vernal pool fairy shrimp	<i>Branchinecta lynchii</i>	FT	--	Found in short-lived, seasonal cool-water vernal pools with low to moderate dissolved solids.	No Potential. No suitable habitat (vernal pools) was observed within the proposed Project site or buffer area. This species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019).

Table 3.5.4.1-1
Special-Status Species Potentially Occurring in the Proposed Project Site

Common Name	Scientific Name	Federal Status	State Status	Habitat/Requirements	Potential to Occur in Project Site
<i>Plants</i>					
California jewelflower	<i>Caulanthus californicus</i>	FE	SE/1B.1	Chenopod scrub, Pinyon and juniper woodland, valley, and foothill grasslands. Found on sandy soils. Elevation range: 61 to 1,000 meters. Blooming period: February through May.	Low Potential. The Project is not proposed in a locale where the species has been documented or is currently known to occur (USFWS 2013). Annual grassland habitat is present; however, the proposed Project site and buffer area are previously disturbed by the former Richgrove Landfill. Historical occurrences of California jewelflower are recorded approximately 0.8 miles northeast and 2 miles southwest; however, the species has been extirpated from locations where populations were known to occur in the vicinity (CDFW 2019).
Recurved larkspur	<i>Delphinium recurvatum</i>	-	-/1B.2	Chenopod scrub, cismontane woodland, valley, and foothill grasslands. Found on alkaline soils. Elevation range: 3 to 790 meters. Blooming period: March through June.	Low Potential. The proposed Project is not proposed in a locale where the species has been documented or is currently known to occur (CDFW 2019). Annual grassland habitat is present; however, the proposed Project site and buffer area are previously disturbed and in the former Richgrove Landfill. A historical occurrence of recurved larkspur is recorded approximately 6.6 miles to the southeast, east of State Highway 65 (CDFW 2019).
San Joaquin adobe sunburst	<i>Pseudobahia peirsonii</i>	FT	SE/1B.1	Cismontane woodland, valley, and foothill grasslands. Found on adobe clay soils; the species' distribution is limited by soil type. Elevation range: 90 to 800 meters. Blooming period: February through April.	No Potential. Annual grassland habitat is present; however, the proposed Project site does not contain heavy clay, adobe soils which typically support San Joaquin adobe sunburst (USFWS 2007). The proposed Project is not proposed in a locale where the species has been documented or is currently known to

Table 3.5.4.1-1
Special-Status Species Potentially Occurring in the Proposed Project Site

Common Name	Scientific Name	Federal Status	State Status	Habitat/Requirements	Potential to Occur in Project Site
					occur. Historical occurrences of the species are recorded in locations approximately 2.2 miles and 5.2 miles to the southeast, and 6.5 miles to the east, on the east side of State Highway 65 (CDFW 2019).

Status Codes:

Federal

FE = Federally listed as Endangered
 FT = Federally listed as Threatened
 FC = Federal Candidate Species
 BCC = Bird of Conservation Concern

State

SE = State listed as Endangered
 ST = State listed as Threatened
 FP = CDFW Fully Protected
 SSC = CDFW Species of Special Concern

California Rare Plant Rank

California Rare Plant Rank 1B = Plants rare, threatened, or endangered in California and elsewhere

Threat Rank 0.1 = Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)

Status, distribution, and habitat information from the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database RareFind 5 (CDFW 2019); California Native Plant Society, California Rare Plant Electronic Inventory (CNPS 2019); and United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (USFWS 2019).

Wildlife and plant species observed during biological surveys are listed in Table 3.5.4.1-2.

Table 3.5.4.1-2
Wildlife and Plant Species Observed During Biological Surveys

Scientific name	Common name
Animals	
<i>Bubo virginianus</i>	Great horned owl
<i>Corvus corax</i>	Common raven
<i>Otospermophilus beecheyi</i>	California ground squirrel
<i>Sylvilagus auduboni</i>	Desert cottontail
<i>Uta stansburiana</i>	Common side-blotched lizard
<i>Zenaida macroura</i>	Mourning dove
Plants	
<i>Amsinckia</i> sp.	Fiddleneck
<i>Asclepias</i> sp.	Milkweed
<i>Avena fatua</i>	Wild oat
<i>Brassica nigra</i>	Black mustard
<i>Bromus rubens</i> ssp. <i>madritensis</i>	Red brome
<i>Centaurea melitensis</i>	Tocalote (Maltese star thistle)
<i>Croton setigerus</i>	Dove weed
<i>Cucurbita palmate</i>	Coyote melon
<i>Datura wrightii</i>	Sacred thorn-apple
<i>Euphorbia supina</i>	Prostrate spurge
<i>Helianthus annuus</i>	Annual sunflower
<i>Heterotheca grandiflora</i>	Telegraph weed
<i>Isocoma</i> sp.	Goldenbush
<i>Lactuca serriola</i>	Prickly lettuce
<i>Salsola tragus</i>	Russian thistle
<i>Sisymbrium altissimum</i>	Tumble mustard
<i>Tribulus terrestris</i>	Puncture vine
<i>Trichostema lanceolatum</i>	Vinegar weed

The following discussion describes habitat types that occur in the proposed Project site and buffer areas and focuses on special-status species that could potentially occur within the proposed Project site, based on historic observations, known occurrences, and site conditions observed at the time of our biological surveys. Special-status species that were not identified on the USFWS, CDFW, or CNPS species lists for the Richgrove quadrangle are not addressed in this document.

Through a literature review and an electronic search of the CNDDDB, CNPS and USFWS data sets, a total of 11 special-status wildlife and plant species were identified that occur in or may be affected by Projects in the Richgrove quadrangle (an area measuring approximately 70 miles). These included eight (8) special-status wildlife and invertebrate species, and three (3) special-status plants. An additional species, the Western spadefoot, was also identified in the adjacent quadrangle to the west.

The proposed Project site occurs outside of the general locations of areas targeted as Valley Floor linkages between natural communities, based on the presence of lands that have been (historically) converted from natural lands to agricultural or urban use. No special-status species were observed in the proposed Project site or buffer area during biological surveys. No special-status species have been previously recorded within the boundaries of the proposed Project site. Four (4) species have been historically documented in the CNDDDB in proximity to the proposed Project site (CDFW 2019):

- San Joaquin kit fox
- Western spadefoot
- California jewelflower
- San Joaquin adobe sunburst

Figure 7 illustrates the locations of special-status plant and animal occurrences relative to the proposed Project site that are documented in the CNDDDB.

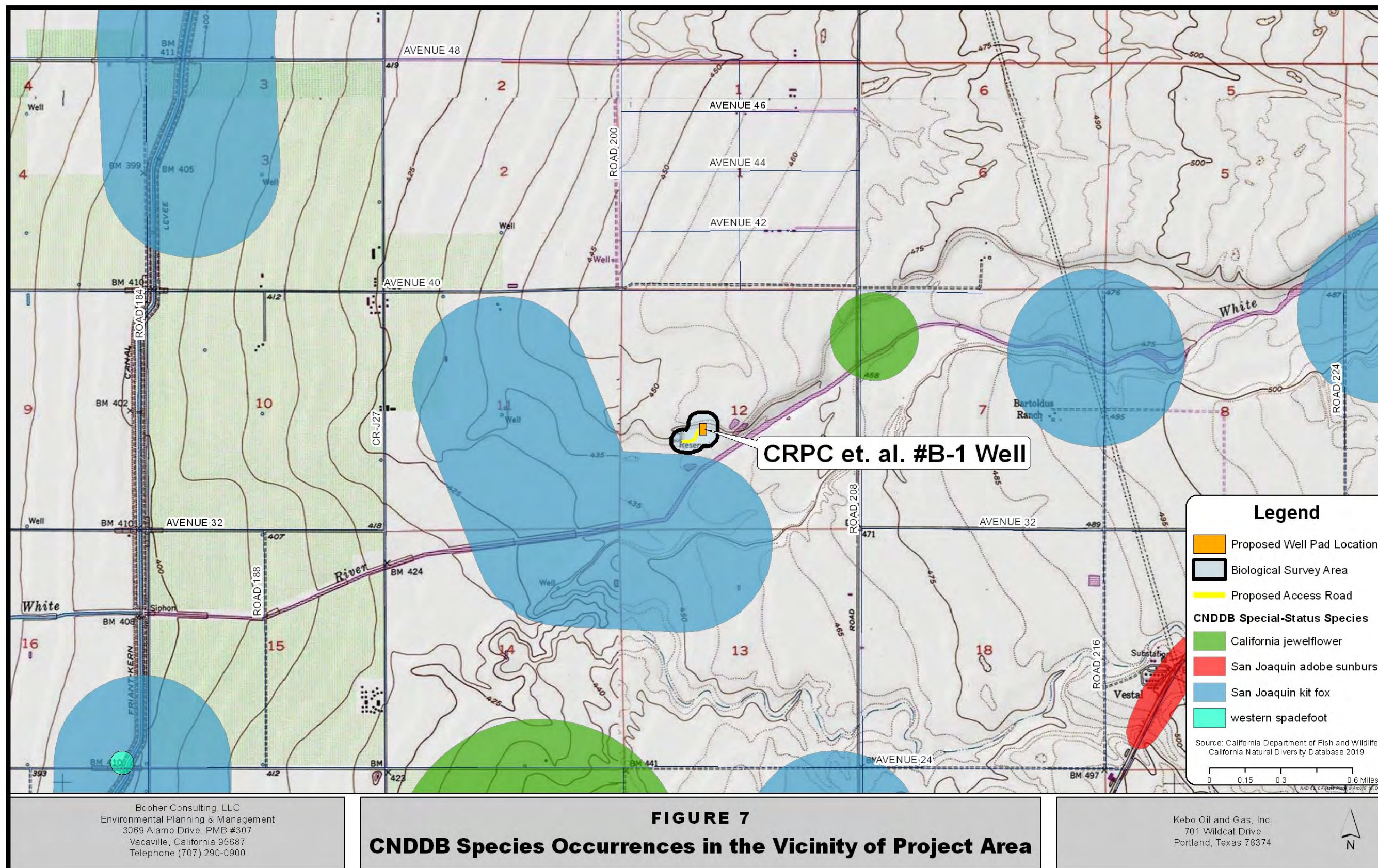
No USFWS designated critical habitat is present in the proposed Project site or buffer areas (USFWS 2019). No perennial or intermittent streams, wetlands, vernal pools, or other sensitive habitats were observed within the boundaries of the proposed Project site. Habitat types observed during our biological field surveys are briefly described below.

HABITAT TYPES

Habitat types observed in the proposed Project site and buffer area are classified and described in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995). Vegetation alliances that were present included:

- *Bromus rubens* - *Schismus (arabicus, barbatus)* (Red brome or Mediterranean grass grasslands) Semi-natural Stands
- *Brassica nigra* and other mustards (Upland mustards) Semi-natural Stands

While non-native annual grassland is not classified as a sensitive vegetation community, the habitat type represents potential for various upland species in the San Joaquin Valley that are considered special-status species (USFWS 1998). Much of the general area was historically converted to agricultural use and the Project is proposed on lands that were formerly used by Tulare County as the Richgrove Landfill. Agricultural crops surrounding the proposed Project site included grape vineyards, almonds, cherries, and wheat.



SPECIAL-STATUS BIOLOGICAL RESOURCES

A majority of references cited in this section can be found in Appendix C – Biological Assessment.

AMPHIBIANS & REPTILES

Blunt-Nosed Leopard Lizard is listed as a federal and State endangered species. The species is also considered Fully Protected by the CDFW. Blunt-nosed leopard lizards inhabit open, sparsely vegetated areas of low relief and are absent from areas of steep slope, dense vegetation, or seasonal flooding. The species occurs in association with alkali scrub, saltbush scrub (*Atriplex* spp.), Ephedra scrub, and native and non-native grassland vegetation communities (Germano and Williams 2005).

Habitat loss from agricultural, energy, and urban developments have greatly reduced the range of blunt-nosed leopard lizard and continue to threaten the species (USFWS 2010c). Species experts determined that over 80-85% of the species' range had been lost by the early 1990's (Germano and Williams 1992) and impacts to habitat continue, from both authorized and unauthorized activities (USFWS 2010). The current range of the species includes undeveloped parcels in the southern-most portion of the San Joaquin Valley (Tulare and Kings Counties south), San Joaquin Valley floor in the vicinity of western Madera County, and along the western edge of the San Joaquin Valley from Merced County south. Its range also extends into the Carrizo Plain and Cuyama Valley southwest of the San Joaquin Valley.

Individual blunt-nosed leopard lizards use small rodent burrows for shelter from predators and temperature extremes and for breeding (nesting). Their burrows are usually abandoned ground squirrel tunnels, or occupied or abandoned kangaroo rat tunnels (Montanucci 1965). Seasonal above-ground activity is correlated with weather conditions (primarily temperature). Optimal activity occurs when air temperatures are between 23.5 °C and 40 °C and ground temperatures are between 22 °C and 36 °C (USFWS 1985). Adults are active above ground in the spring months from March or April through June or July with the level of activity decreasing until approximately late June when most adults go underground and become inactive. At this latter time only sub-adult and hatchling individuals generally continue to be active. By August or September generally all adults have retreated to burrows to begin over-wintering. Hatchlings may be active until mid-October or November.

The average home range size of blunt-nosed leopard lizards in the southern end of the Valley, near Lokern, ranges from 9 to 23 acres (Bailey and Germano 2015). Estimated densities in occupied habitat have varied from 0.1 to 8.5 lizards per acre (Uptain *et al.* 1985, Williams and Germano 1991, Williams *et al.* 1993, Germano *et al.* 1994). Based on a recent study of habitat patch size, blunt-nosed leopard lizards were not present in areas of suitable habitat that measured less than 588 acres in size (Bailey and Germano 2015). Modeling indicated there was only a 4% chance of blunt-nosed leopard lizard occurring on a habitat patch less than 250 acres, and the probability of occurrence increased as the size of the habitat patch increased (Bailey and Germano 2015).

The species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019). As previously described, the Project is proposed in the former Richgrove Landfill site, which has been disturbed by past use and continued trespass dumping.

The parcel contains non-native annual grassland but does not represent suitable habitat for blunt-nosed leopard lizard based on a lack of burrows.

Factors contributing to the unsuitability of the site for blunt-nosed leopard lizard include small patch size, surrounding agricultural use, and isolation from any adjacent suitable habitat. Based on aerial imagery, lands outside the proposed Project site parcel are mainly under active agricultural production. Forage for blunt-nosed leopard lizards in the parcel where the Project is proposed would be considered limited or unavailable due to pesticide use on surrounding agricultural lands. Based on these factors and site conditions observed during biological surveys, blunt-nosed leopard lizards are not expected to occur in the proposed Project site or buffer area.

California red-legged frog is the largest native frog in the western United States, ranging from 1.75 to 5.25 inches from snout to vent (Stebbins 2003). The California red-legged frog can appear brown, gray, olive, red, or orange above with a pattern of dark spots or flecks. The hind legs are well developed, with large webbed feet. Adult frogs have white on the underside, with patches of bright red or orange on the hind legs and abdomen.

The California red-legged frog requires a variety of habitat elements, with aquatic breeding areas within a matrix of riparian and upland dispersal habitats (USFWS 2013). Breeding occurs from November through March. Deep pools with dense stands of overhanging willows and an intermixed fringe of cattails are considered optimal habitat; however, the species has been found in ephemeral creeks and drainages, and in ponds that do not support riparian vegetation. Accessibility to sheltering habitat is essential for red-legged frogs, and can be a limiting factor in its distribution. Historically distributed along the coast from Marin County and inland from Shasta County, south to northwestern Baja California, the species is currently known to occur in only a few drainages in the Sierra Nevada foothills, compared to more than 60 historical records (USFWS 2013). In southern California, the species has essentially disappeared from the Los Angeles area south to the Mexican border; the only known population in Los Angeles County is on the Angeles National Forest, in San Francisquito Canyon. This species is federally listed as Threatened and a recovery plan for the California red-legged frog was published on May 28, 2002. Designated critical habitat for this species was revised and a final rule was published on March 17, 2010.

The proposed Project site is located outside the historic range and current known distribution of the species. No suitable breeding habitat for the California red-legged frog is present in the proposed Project site, buffer area or within one (1) mile. No individuals were observed in the proposed Project site or buffer area during biological surveys. This species has not been previously documented in the CNDDB within the boundaries of or in proximity to the proposed Project site (CDFW 2019). Since the proposed Project site and buffer area do not support aquatic or riparian habitat, and the proposed Project site does not occur within one (1) mile of suitable breeding habitat, California red-legged frogs are not expected to occur in the proposed Project site.

Western spadefoot occurs in grassland habitats, and in valley-foothill hardwood woodlands. This species requires vernal pools for breeding and egg-laying. Western spadefoot has been recorded near the Friant Kern Canal, approximately 2.8 miles southwest of the proposed Project site (CDFW 2019).

No suitable habitat was observed in the proposed Project site. No individual Western spadefoot toads were identified during biological surveys. Where natural lands with vernal pools persist, the species would be expected to occur; however, as previously described, the Project is proposed in the former Richgrove Landfill site, which has been disturbed by past use and continued trespass dumping. Based on past land use and site conditions observed during biological surveys, western spadefoot are not expected to be present in the proposed Project site.

Giant garter snake is the largest of all garter snakes and perhaps the most aquatic garter snake of California. They are brown below and brown, olive or tan above with checkered spots and three (3) pale or yellow stripes that run down their back and sides. Giant garter snakes generally measure three to five (3-5.5) feet in length. Giant garter snakes are active spring to mid-fall (May 1 through October 1).

Breeding occurs from March to May. Females give birth to live young from late July to early September; brood sizes range from 10 to 46 young. During fall, they seek refuge in burrows or other soil crevice above floodwater levels and remain dormant throughout the winter. The diet of a giant garter snake consists mainly of fish, amphibians, and their larvae. They will also consume ground nesting birds and their young.

The species occurs in marsh, swamp, riparian scrub, and wetland habitats. Giant garter snakes prefer freshwater marsh and low gradient streams with mud bottoms, but have adapted to drainage canals and irrigation ditches (CDFW 2019). These snakes require enough water during the active season to maintain high densities of prey; emergent wetland vegetation (i.e., cattails and bulrushes) for cover and foraging; and adjacent uplands for basking. Higher uplands are used for cover and refuge from floodwaters during its inactive season.

The giant garter snake is listed as a Federal and State threatened species. Giant garter snakes are endemic to the Central Valley of California and historically occurred throughout the San Joaquin and Sacramento Valleys (Hansen and Brode 1980). The species has been documented north from Colusa County and south to Buena Vista Lake in Kern County. Its current range is limited to the Sacramento Valley and isolated portions of the San Joaquin Valley (USFWS 1999); however, there have only been a few recent sightings in the San Joaquin Valley (USFWS 2019).

The proposed Project site is located outside the historic range and current known distribution of the species. Since the proposed Project site is located outside the species' range, the species is not expected to occur in the proposed Project site or buffer area.

Birds

Lawrence's goldfinch is a small finch with a pointed bill and forked tail. These birds are grayish brown in appearance with yellow wing patches; males have a black face and yellow belly patch. Lawrence's goldfinches nest in open woodlands with chaparral, weedy fields, and a source of freshwater. They require trees for nesting, including pinyon pine and juniper, and have been noted using ornamental cypress or conifers. Birds feed mainly on annual plant seeds by gleaning foliage. During the breeding season and over winter, the species is gregarious, traveling and foraging in flocks.

No suitable nesting habitat is present in the proposed Project site or buffer area. No individuals were observed during biological surveys. The species has not been documented in the CNDDDB in proximity to the proposed Project site (CDFW 2019), but has been recorded in various locations in Tulare County. Individuals have been observed near Lake Wollomes, approximately 7.8 miles to the southwest, and at the Pixley National Wildlife Refuge, 15 miles northwest of the proposed Project site (eBird 2019).

Lawrence's goldfinch may potentially forage in the proposed Project site or travel through during normal migration; however, there is low potential for the species to become established or to nest in the proposed Project site based on a lack of suitable nesting habitat.

Tricolored blackbird is mostly a resident in California and is common throughout the Central Valley. The tricolored blackbird is listed as a USFWS Bird of Conservation Concern (BCC), and a CDFW Species of Special Concern (SSC).

The species breeds near freshwater, generally in emergent wetlands that support tall, dense cattails and/or tules. This highly colonial species requires open water, protected nesting substrate, and a foraging area with insect prey within a few miles of the colony. Tricolored blackbirds feed in grassland, cropland, and along the edges of ponds.

No suitable nesting habitat is present in the proposed Project site or buffer area. However, small agricultural ponds were observed approximately 0.3 miles north of the proposed Project site, adjacent to the existing access road south of Avenue 40. This species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019). No individuals were observed during biological surveys. Tricolored blackbird may fly over and/or forage in the Project area; however, there is low potential for the species to become established or to nest in the proposed Project based on a lack of suitable nesting (wetland) habitat.

Mammals

Tipton kangaroo rat occurs in saltbush scrub and sink scrub habitats in the Tulare Lake Basin of the southern San Joaquin Valley. This species needs soft, friable soils that escape seasonal flooding and the species often dig burrows at the bases of shrubs (CDFW 2019).

Historically, Tipton kangaroo rats were distributed on the Valley floor; distribution was limited to arid-land communities occupying the valley floor of the Tulare Basin (USFWS 2010a and USFWS 1998). By 1985, the inhabited area had been reduced, primarily by cultivation and urbanization, to only about 4 percent of the historical acreage. The construction of dams and canals, leading to a substantial increase in lands that could then be used for agriculture or development, was principally responsible for the decline and endangerment of the Tipton kangaroo rat.

The current geographic distribution of the subspecies is not clearly defined. Current occurrences are limited to scattered, isolated areas (Kings, Tulare, and Kern Counties). Approximately 75 Tipton kangaroo rat occurrences have been reported to CNDDDB (CDFW 2019). Densities typically are low, but populations are known to fluctuate greatly in response to climatic conditions

(precipitation) and vary across habitat type (seasonal/short-lived invasion of vegetation, particularly by non-native grasses, can exacerbate Tipton kangaroo rat declines) (Morrison et al. 1996; Williams and Germano 1992). A majority of the known sites that are occupied by Tipton kangaroo rat are under public/conservation ownership and these populations are small, highly fragmented, and isolated from each other (USFWS 2010a).

The proposed Project site is not in a wildlife management area or within an area proposed for conservation and restoration for Tipton kangaroo rat. The proposed Project site does not support suitable habitat (alkali sink/scrub) for Tipton kangaroo rats. No small mammal burrows were identified within the proposed Project site and no evidence of the species was observed during biological resource surveys. Tipton kangaroo rat has not been documented in the proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019). As previously described, the Project is proposed in the former Richgrove Landfill site, which has been disturbed by past use and continued trespass dumping. Based on a lack of suitable habitat and site conditions observed during biological surveys, Tipton kangaroo rats are not expected to occur in the proposed Project site.

San Joaquin Kit Fox historically occurred throughout the southern portion of the San Joaquin Valley, along the eastern edge of the San Joaquin Valley, and in the dry interior valleys of the Coast Ranges. The species occurs in a variety of open grassland, oak savannah, and shrub vegetation communities. However, in the southern portion of its range it is generally found in sparse annual grassland and scrub communities (e.g., valley sink scrub, saltbush scrub).

Home ranges for the taxon have been reported by several authors to range from 1 to 12 square miles (USFWS 1998). Home range size of kit foxes is very extensive, and is thought to be related to abundance of prey (White and Ralls 1993; White and Garrott 1999). The mean home range size of an adult San Joaquin kit fox at Elk Hills (former Naval Petroleum Reserve) was found to be 1,071 acres, while the mean home range of pups is 525 acres (Cypher *et al.* 2001).

Den characteristics of the subspecies vary across its range. In the southern portion of its range, the taxon often creates dens with two entrances; natal/pupping dens typically have multiple entrances. Entrances range from eight to ten (8-10) inches in diameter and are normally higher than wide, but kit foxes can utilize dens with entrances as small as four (4) inches in diameter. Kit foxes often change dens on a regular basis.

San Joaquin kit fox has not been documented in the proposed Project site. The species has been historically recorded in several locations surrounding the Project; the closest occurrences in the CNDDDB are 0.6 miles southwest, 1.7 miles east, and 2.4 miles south (see Figure 7). The CNDDDB occurrence records are based on den and road kill observations between 1971 and 1975, and were made in locations that have since been converted to agricultural use (CDFW 2019). The proposed Project site occurs between two (2) known satellite population areas and is not considered to provide linkage to core population areas based on the conversion of natural lands to agricultural use (USFWS 2010b). Agricultural lands may provide limited use as foraging habitat for the species; however, documented use of this habitat varies (Clark *et al.* 2005; Warrick *et al.* 2007) and its suitability in supporting kit foxes appears limited (USFWS 2010b).

Potential habitat for San Joaquin kit fox is present in the proposed Project site and buffer area; however, the parcel is disturbed by its former use as the Richgrove Landfill and surrounded by active agriculture. No individual San Joaquin kit fox, known dens, or natal dens were observed. Two (2) burrows that were of appropriate size for potential use by kit fox were recorded. No other sign (i.e., scat, tracks, digging, prey remains, etc.) of kit fox activity was identified during biological surveys. The species may utilize potential dens for shelter, and may forage in the proposed Project site and buffer area. However, forage would be limited in the proposed Project site based on a lack of small mammal burrows that would support a suitable prey base.

Invertebrates

Vernal pool fairy shrimp are short-lived crustaceans that occur in small vernal pools of California. Vernal pool fairy shrimp are endemic to grasslands of the Central Valley, Central and South Coast mountains. The species has been found throughout the Central Valley, from Shasta County to Tulare County, along the Coast Range from Solano to San Luis Obispo and Santa Barbara Counties, and in southern California in Riverside and San Diego Counties.

Their habitats form when winter rains fill shallow depression; pools persist for months and then evaporate in the spring. This species is known to inhabit clear-water sandstone depression and grassland swale pools. They are generally 0.5- 1.5 inches long and are fairly translucent. Their life span is from December to early May, and is often temperature dependent. They feed on algae, bacteria and detritus and are consumed by birds, reptiles, and amphibians. Eggs are laid by adult shrimp each winter season; however, eggs may lie dormant in the soil for up to ten (10) years before hatching.

No suitable habitat (vernal pools) was observed in the proposed Project site or buffer area. As such, vernal pool fairy shrimp are not expected to occur in the proposed Project site.

Incidental Wildlife

Wildlife species that we recorded during our biological surveys for special-status species are listed in Table 2. Common raven and other raptors, such as red-tailed hawk, may construct nests on power poles that occur parallel to existing access roads. Common bird species such as mourning dove may be present and potentially nest in the proposed Project site or buffer area. In the event that resident or migratory birds become established in the proposed Project site prior to Project implementation, avoidance measures are included in this report.

SPECIAL-STATUS PLANTS

Based on literature and database reviews, three (3) special-status plant species have been historically recorded in the Richgrove USGS 7.5-minute quadrangle (see Table 1). These include California jewelflower, recurved larkspur, and San Joaquin adobe sunburst.

California jewelflower is an annual herb that occurs in non-native grassland, scrub, and pinyon-juniper woodland. Historical records suggest that California jewelflower also occurred in valley saltbush scrub in the past (CDFW 2019). Herbaceous cover is dense at most California

jewelflower sites (Cypher 1994). Native plant species, such as annual fescue (*Vulpia microstachys*), clovers (*Trifolium* spp.), red maids (*Calandrinia ciliata*), and goldfields (*Lasthenia californica*) comprise a high proportion of the vegetation at many of the known locations. The non-native grass red brome (*Bromus madritensis* ssp. *rubens*) is a significant component of the vegetation only at the Carrizo Plain sites (Taylor and Davilla 1986, Cypher 1994).

California jewelflower populations are known from 63 occurrences (CNPS 2016). Approximately half of the historic collection sites were on the floor of the San Joaquin Valley in Fresno, Kern, and Tulare Counties. Several other collections are from the Carrizo Plain (San Luis Obispo County) and Cuyama Valley (Santa Barbara and Ventura counties). By 1986, all the occurrences on the San Joaquin and Cuyama Valley floors had been eliminated (USFWS 2013a). Populations of naturally occurring California jewelflower that are known to be extant today are in three concentrated areas: Santa Barbara Canyon, Carrizo Plain National Monument in San Luis Obispo County, and Kreyenhagen Hills in Fresno County. Based on the USFWS 5-Year Review for the species, there are no natural extant populations of California jewelflower in Tulare County (USFWS 2013).

Potential habitat for California jewelflower is present in the proposed Project site and buffer area; however, the parcel was disturbed by waste disposal at the former Richgrove Landfill Site. California jewelflower has not been documented within the boundaries of the proposed Project site. Historical occurrences of California jewelflower are recorded approximately 0.8 miles northeast and 2 miles southwest (see Figure 7). The records of California jewelflower are from collections dated 1958 and 1978 (CDFW 2019); however, the species has been extirpated from locations where populations were known to occur in the vicinity during agricultural conversion (USFWS 2013).

The Project is not proposed in a locale where the species has been previously recorded or where extant populations are known to occur (USFWS 2013). Based on conditions observed during biological surveys, and the current known distribution of the species, California jewelflower is not expected to be present or become established in the proposed Project site.

Recurved larkspur is a perennial herb that is endemic to California. Historically, recurved larkspur was widely distributed in the Sacramento and San Joaquin valleys, ranging from Glenn and Butte counties south to Kern County. Most of the known occurrences are in Kern, Tulare, and San Luis Obispo Counties. The species now appears to be very rare outside the southern San Joaquin Valley (CDFW 2019). Much of this species habitat has been converted to agriculture, and the species continues to be threatened by grazing and trampling (CNPS 2019).

Recurved larkspur occurs on sandy or clay alkaline soils, generally in annual grasslands or in association with saltbush scrub or valley sink scrub habitats. The species occurs at elevation ranging from 100 to 2,000 feet above sea level (CDFW 2019). It blooms from March through June (CNPS 2019). Very little ecological information is available for the species and most of the literature on the species pertains to its taxonomy.

Potential habitat for recurved larkspur is present in the proposed Project site and buffer area; however, the parcel was disturbed by waste disposal at the former Richgrove Landfill Site. A

historical occurrence of recurved larkspur is recorded approximately 6.6 miles southeast, east of State Highway 65 (CDFW 2019).

The Project is not proposed in a locale where the species has been previously recorded or where extant populations are known to occur (CDFW 2019). Based on conditions observed during biological surveys, and the current known distribution of the species, recurved larkspur is not expected to be present or become established in the proposed Project site.

San Joaquin adobe sunburst is federally listed as threatened and California endangered. The species is narrowly distributed in the Central Valley of California (Stebbins 1991, Hickman 1993). The species has been documented in Fresno, Kern and Tulare Counties and is found at 32 extant occurrences (USFWS 2007). The historical distribution of the species is unknown as a result of extensive land conversion to agriculture. However, three (3) major population concentration areas now include east of Fresno in Fresno County, west of Lake Success in Tulare County, and northeast of Bakersfield in Kern County (CNDDDB 2019).

San Joaquin adobe sunburst is an annual herb that blooms during March and April (CNPS 2019). The species occurs on heavy, adobe clay soils within cismontane woodland and valley and foothill grassland habitats. Soil type is the most important factor in determining suitable habitat for this species; distribution is limited to a few soil types (Stebbins 1991). All known wild occurrences of San Joaquin adobe sunburst are associated with the following soils: Cibo clay, Porterville clay, Centerville clay, and Mt. Olive clay (Stebbins 1991).

Historical occurrences of the species are recorded in locations approximately 2.2 miles and 5.2 miles to the southeast, and 6.5 miles to the east, on the east side of State Highway 65 (CDFW 2019). The Project is not proposed in a locale where the species has been previously recorded or where extant populations are known to occur (USFWS 2007). Furthermore, since the proposed Project site and buffer area do not contain clay soils (USDA 2019), which are known to support San Joaquin adobe sunburst, the species is not expected to occur in the proposed Project site.

3.5.4.2 Regulatory Setting

Federal

Federal Endangered Species Act of 1973 (USC, Title 16, Sections 1531 through 1543)

The Federal Endangered Species Act (ESA) and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. In addition, the ESA defines species as threatened or endangered and provides regulatory protection for listed species. The ESA also provides a program for the conservation and recovery of threatened and endangered species as well as the conservation of designated critical habitat that the USFWS determines is required for the survival and recovery of these listed species.

Section 7 of the ESA requires Federal agencies, in consultation with and assistance from the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or

endangered species or result in the destruction or adverse modification of critical habitat for these species. The USFWS and National Marine Fisheries Service (NMFS) share responsibilities for administering the FESA. Regulations governing interagency cooperation under Section 7 are found in CCR Title 50, Part 402. The opinion issued at the conclusion of consultation would include a statement authorizing “take” that may occur incidental to an otherwise legal activity.

Section 9 lists those actions that are prohibited under the FESA. Although take of a listed species is prohibited, it is allowed when it is incidental to an otherwise legal activity. Section 9 prohibits take of listed species of fish, wildlife, and plants without special exemption. The definition of “harm” includes significantly impairing behavioral patterns related to breeding, feeding, or shelter. “Harass” is defined as actions that create the likelihood of injury to listed species by disrupting normal behavioral patterns related to breeding, feeding, and shelter significantly.

Section 10 provides a means whereby a nonfederal action with the potential to result in take of a listed species can be allowed under an incidental take permit. Application procedures are found at 50 Code of Federal Regulations (CFR) 13 and 17 for species under jurisdiction of USFWS and 50 CFR 217, 220, and 222 for species under the jurisdiction of NMFS.

San Joaquin Valley Upland Species Recovery Plan

The San Joaquin Valley Upland Species Recovery Plan (USFWS 1998) covers 34 species of plants and animals that occur in the San Joaquin Valley. The ultimate goal of this recovery plan is to delist the 11 endangered and threatened species and ensure the long-term conservation of the 23 candidates and species of concern listed in the document. An interim goal is to reclassify the endangered species to threatened status. USFWS is responsible for implementation of the recovery plan.

Migratory Bird Treaty Act (16 USC 703 through 711)

The Migratory Bird Treaty Act (MTBA) is the domestic law that affirms, or implements, a commitment by the United States to four (4) international conventions (with Canada, Mexico, Japan, and Russia) for the protection of a shared migratory bird resource. The MBTA makes it unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, or kill migratory birds. The law also applies to the removal of nests occupied by migratory birds during the breeding season. The MBTA makes it unlawful to take, pursue, molest, or disturb these species, their nests, or their eggs anywhere in the United States.

Federal Clean Water Act (33 USC 1251 through 1376)

The Clean Water Act (CWA) provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation’s waters. Section 401 requires that a project proponent for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a state certification that the discharge complies with other provisions of CWA. The Regional Water Quality Control Board (RWQCB) administers the certification program in California. Section 402 establishes a permitting system for the discharge of any pollutant (except dredge or fill material) into waters of the United States. Section 404

establishes a permit program, administered by the U.S. Army Corps of Engineers (USACE), regulating the discharge of dredged or fill material into waters of the United States, including wetlands. Implementing regulations by USACE are found at 33 CFR Parts 320–330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines and were developed by the Environmental Protection Agency (EPA) in conjunction with USACE (40 CFR Part 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

Wetlands and Other Waters of the U.S.

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities, are considered sensitive biological resources and can fall under the jurisdiction of several regulatory agencies.

The USACE exerts jurisdiction over “waters of the U.S.,” including all waters that are subject to the ebb and flow of tide; wetlands and other waters such as lakes, rivers, streams (including intermittent or ephemeral streams), mudflats, sand flats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds; and tributaries of the above features. The extent of waters of the U.S. is generally defined as that portion that falls within the limits of the ordinary high water mark (OHWM). Typically, the OHWM corresponds to the 2-year flood event.

Wetlands, including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas, are defined by USACE as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (hydric soils, hydrophytic vegetation, and wetlands hydrology) as determined by field investigation must be present for a site to be classified as a wetland by USACE.

Permits for Fill Placement in Waters and Wetlands (Section 404 of CWA)

CWA Section 404 regulates the discharge of dredge and fill material into waters of the United States. Applicants must obtain a permit from USACE for all discharges of dredge or fill material into waters of the U.S., including wetlands, before proceeding with a proposed activity. The USACE may issue either an individual permit evaluated on a case-by-case basis or a general permit evaluated at a program level for a series of related activities. General permits are preauthorized and are issued to cover multiple instances of similar activities expected to cause only minimal significant environmental impacts. Nationwide permits (NWP) are a type of general permit issued to cover particular fill activities. Each NWP specifies particular conditions that must be met for the NWP to apply to a particular project. Waters of the United States in the project area are under the jurisdiction of the Sacramento District of the USACE. Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. In addition, the USACE cannot issue or verify any permit until a water quality certification or a waiver of certification has been issued pursuant to CWA Section 401.

Water Quality Certification (Section 401 of CWA)

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the U.S. must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

State

California Endangered Species Act (California Fish and Game Code 2050 et seq.)

The California Endangered Species Act (CESA) prohibits the take of listed species, except as otherwise provided in state law. Take for CESA is defined as it is in the federal ESA; however, unlike the federal ESA, CESA also applies the take prohibitions to species petitioned for listing as state candidates rather than only those listed species. State lead agencies are required to consult with the California Department of Fish and Wildlife (CDFW), to ensure that any actions undertaken by the lead agency are not likely to jeopardize the continued existence of any state-listed species or result in destruction or degradation of required habitat. CDFW is authorized to enter into a Memorandum of Understanding (MOU) with individuals, public agencies, universities, zoological gardens, and scientific or educational institutions to import, export, take, or possess listed species for scientific, educational, or management purposes.

Sections 1600 to 1603 of the State Fish and Game Code

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California are subject to the regulatory authority of the CDFW pursuant to Sections 1600 through 1603 of the State Fish and Game Code (Code) and require preparation of a Streambed Alteration Agreement. Pursuant to the Code, a stream is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel having banks and supporting fish or other aquatic life. Based on this definition, a watercourse with surface or subsurface flows that support or have supported riparian vegetation is a stream and is subject to CDFW jurisdiction.

Section 2080 and 2081 of the State Fish and Game Code

Code Section 2080 states that, “No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission [State Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter [Chapter 1.5, Endangered Species], or the Native Plant Protection Act, or the California Desert Native Plants Act.” Pursuant to Section 2081 of the Code, the CDFW may authorize individuals or public agencies to import, export, take, or possess, any state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through

permits or MOUs: (1) if the take is incidental to an otherwise lawful activity, (2) if impacts of the authorized take are minimized and fully mitigated, (3) if the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and (4) if the applicant ensures adequate funding to implement the measures required by CDFW. The CDFW shall make this determination based on available scientific information and shall include consideration of the ability of the species to survive and reproduce.

Sections 3503 and 3503.5 of the State Fish and Game Code

These sections of the Code provide regulatory protection to resident and migratory birds and all birds of prey within the State of California, including the prohibition of the taking of nests and eggs, unless otherwise provided for by the Code. Specifically, these sections of the Code make it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this Code.

Regional Water Quality Control Board

Under Section 401 of the CWA, the RWQCB must certify that actions receiving authorization under Section 404 of the CWA also meet state water quality standards. The RWQCB also regulates waters of the state under the Porter-Cologne Act Water Quality Control Act (Porter-Cologne Act). The RWQCB requires projects to avoid impacts to wetlands if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. The RWQCB typically requires compensatory mitigation for impacts to wetlands and/or waters of the state. The RWQCB also has jurisdiction over waters deemed isolated or not subject to Section 404 jurisdiction under the Solid Waste Association of Northern Cook County (SWANCC) decision. Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the state and prospective dischargers are required obtain authorization through an Order of Waste Discharge or waiver thereof from the RWQCB and comply with other requirements of Porter-Cologne Act.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, waters of the State fall under the jurisdiction of the appropriate RWQCB. Under the act, the RWQCB must prepare and periodically update basin plans. Each basin plan sets forth water quality standards for surface water and groundwater as well as actions to control nonpoint and point sources of pollution, thereby achieving and maintaining these standards. Projects that affect wetlands or waters must meet waste discharge requirements of the RWQCB, which may be issued in addition to water quality certification or a waiver under Section 401 of the CWA.

California Native Plant Protection Act

The CESA defers to the California Native Plant Protection Act of 1977, which prohibits importing of rare and endangered plants into California, taking of rare and endangered plants, and selling of rare and endangered plants. State-listed species are protected mainly in cases where state agencies are involved in projects under the California Environmental Quality Act (CEQA). In this case,

plants listed as rare or under the California Native Plant Protection Act are not protected under the CESA but can be protected under CEQA. The following activities are exempt from the California Native Plant Protection Act:

- Agricultural operations.
- Fire control measures.
- Timber harvest operation in accordance with a Timber Harvest Plan under the Forest Practice Act.
- Mining assessment work.
- Removal of endangered or rare plants by private landowners on private land for construction of canals, ditches, roads, or other rights-of-way; and
- Removal of endangered or rare plants for the public performance of public service by a public agency or publicly or privately owned utility.

State CEQA Guidelines, Section 15380

Although threatened and endangered species are protected by specific federal and state statutes, State CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in CEQA primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a candidate species that has not been listed by either USFWS or CDFG. Thus, CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agencies have an opportunity to designate the species as protected, if warranted. CEQA also calls for the protection of other locally or regionally significant resources, including natural communities. Although natural communities do not at present have legal protection of any kind, CEQA calls for an assessment of whether any such resources would be affected and requires findings of significance if there would be substantial losses. Natural communities listed by CNDDDB as sensitive are considered by CDFG to be significant resources and fall under CEQA Guidelines for addressing impacts. Local planning documents such as general plans often identify these resources as well.

Local

Tulare County General Plan

The Tulare County General Plan 2030 Update (GPU) (Tulare County 2012) identifies the federal, state, and local statutes, ordinances, or policies that govern the conservation of biological resources that must be considered by Tulare County during the decision-making process for any Project that could affect biological resources. Part I of the Tulare County General Plan (Tulare County 2012) outlines the goals and policies of Tulare County and provides a framework for land use decision making through the year 2030. The *Conservation Element* in the General Plan addresses the conservation, development and use of natural resources by identifying goals, policies, and implementation measures to ensure the appropriate use, enjoyment, and protection of natural and

cultural resources in Tulare County.

The General Plan Framework Component sets forth principles guiding the protection and development of the County's agricultural, scenic, cultural, historic, and natural resources. As set forth in framework *Concept 4: Natural and Cultural Resources*, the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques.

Chapter 8. Environmental Resources Management (ERM)

ERM Principle 1: Natural Resources. Provide for the appropriate utilization of natural resources in the County [New Principle] [Board of Supervisors, November 2005].

ERM Principle 2: Reduce Impacts. Design and plan new development to reduce impacts to natural and cultural resources [New Principle].

Section 8.1 Biological Resources

ERM-1: To preserve and protect sensitive significant habitats, enhance biodiversity, and promote healthy ecosystems throughout the County.

ERM-1.1: Protection of Rare and Endangered Species. The County shall ensure the protection of environmentally sensitive wildlife and plant life, including those species designated as rare, threatened, and/or endangered by State and/or Federal government, through compatible land use development.

ERM-1.2: Development in Environmentally Sensitive Areas. The County shall limit or modify proposed development within areas that contain sensitive habitat for special status species and direct development into less significant habitat areas. Development in natural habitats shall be controlled so as to minimize erosion and maximize beneficial vegetative growth.

ERM-1.4: Protect Riparian Areas. The County shall protect riparian areas through habitat preservation, designation as open space or recreational land uses, bank stabilization, and development controls.

ERM-1.6: Management of Wetlands. The County shall support the preservation and management of wetland and riparian plant communities for passive recreation, groundwater recharge, and wildlife habitats.

ERM-1.8: Open Space Buffers. The County shall require buffer areas between development projects and significant watercourses, riparian vegetation, wetlands, and other sensitive habitats and natural communities. These buffers should be sufficient to assure the continued existence of the waterways and riparian habitat in their natural state.

ERM-1.16: Cooperate with Wildlife Agencies. The County shall cooperate with State and federal wildlife agencies to address linkages between habitat areas.

ERM-1.17: Conservation Plan Coordination. The County shall coordinate with local, State, and federal habitat conservation planning efforts (including Section 10 Habitat Conservation Plan) to protect critical habitat areas that support endangered species and other special-status species.

Section 8.3 Mineral Resources – Other

ERM-3: To protect the current and future extraction of mineral resources that are important to the County's economy while minimizing impacts of this use on the public and the environment.

ERM-3.3: Small-Scale Oil and Gas Extraction. The County shall allow by Special Use Permit small-scale oil and gas extraction activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land and are within an established oil and gas field outside of a UDB.

ERM-3.4: Oil and Gas Extraction. Facilities related to oil and gas extraction and processing in the County may be allowed in identified oil and gas fields subject to a special use permit. The extraction shall demonstrate that it will be compatible with surrounding land uses and land use designations.

ERM-3.5: Reclamation of Oil and Gas Sites. The County shall require the timely reclamation of oil and gas development sites upon termination of such activities to facilitate the conversion of the land to its primary land use as designated by the General Plan. Reclamation costs shall be borne by the operator, and guaranteed by financial assurances set aside for restoration procedures.

Section 8.8 Work Plan/Implementation Measures

Implementation Measure 8.8.2: The County shall review development proposals against the California Natural Diversity Data Base, and other available studies provided by the California Department of Fish and Game, and consult, as appropriate, with the California Department of Fish and Game and U.S. Fish and Wildlife to assist in identifying potential conflicts with sensitive natural communities or special status species.

Implementation Measure 8.8.3: On project sites that have the potential to contain species of local or regional concern, sensitive natural communities or special-status species, the County shall require the project applicant to have the site surveyed and mapped by a qualified biologist. A report on the finding of this survey shall be submitted to the County as part of the application and environmental review process.

Implementation Measure 8.8.4: Where sensitive habitat for special status species is found to exist on a site and biological survey validates that such habitat does exist and there is the potential for occurrences of special status species to be found, the County shall require a plan to protect these areas, with assurances to protect these areas to be submitted prior to the time of construction. Such plan shall first recommend avoidance where at all feasible. When avoidance is infeasible, the

County shall consider a variety of optional measures to limit the loss of habitat, including modification of the proposal or other such acceptable practice as identified in a biological study conducted by an environmental professional.

3.5.4.3 Impact Analysis

- a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?***

Project activities during site preparation will result in removal of annual vegetation, soil disturbance, and compaction. The proposed Project will impact approximately 0.91 acres of non-native annual grassland habitat. All Project activities, including staging of materials, equipment, and vehicle parking will be confined to the approved Project site and areas of existing disturbance.

The biological assessment conducted for the proposed Project found that no special-status species were present within the boundaries of the proposed Project site. No riparian, wetland, vernal pool, or other sensitive community types were observed within the proposed Project site during biological surveys. No perennial or intermittent streams or rivers occur in the proposed Project site or buffer areas. Since these features are not present in the Project site or buffer area, no impacts to streams, riparian areas, wetlands, vernal pools, or other sensitive habitats will result from the proposed Project.

No USFWS designated critical habitat is present in the proposed Project site; therefore, no USFWS designated critical habitat will be impacted.

Based on a lack of suitable aquatic habitat in the Project area, there is no potential for California red-legged frog or giant garter snake to be present in the proposed Project. Since the Project area does not contain vernal pool habitat, there is no potential for Western spadefoot or vernal pool fairy shrimp to be present in the proposed Project. Accordingly, these species would not be impacted by Project implementation.

Since the proposed Project site and buffer area do not support suitable habitat for potential use by blunt-nosed leopard lizards or Tipton kangaroo rat, there is no potential for these species to be present. No impacts to blunt-nosed leopard lizard or Tipton kangaroo rat are anticipated to result from Project implementation.

The proposed Project site is not in a known locale where populations of special-status plants have been recorded; therefore, California jewelflower, recurved larkspur, and San Joaquin adobe sunburst are not expected to be present or become established. No impacts to these species are anticipated to result from Project implementation.

No special-status animal or plant species were identified in the proposed Project site during biological surveys. As a result of historic land conversion to agricultural use on surrounding parcels, the proposed Project site is isolated and not connected to native (uncultivated habitats).

The proposed Project site is within the former Richgrove Landfill, which has been disturbed by past use as a disposal site and continued trespass dumping. However, based on the habitat type present and environmental conditions observed during biological surveys, Booher Consulting determined there is potential, albeit low, for special-status wildlife species including San Joaquin kit fox, Lawrence's goldfinch, and tricolored blackbird to travel through and/or forage in the proposed Project site.

Implementation of the proposed Project could potentially impact individual San Joaquin kit fox if individuals are present during Project activities. Impacts to kit fox could occur through crushing by construction equipment during site preparation or by vehicle strike during travel to/from the proposed Project site. This species could also be affected due to noise and vibration from Project activities if dens are located closer than 250 feet to the proposed Project site; Project related noise and vibration could cause the abandonment of occupied den sites. If potential dens were present and directly impacted, animals could become entombed in their dens if occupied. If food waste were left during construction, it may attract predators (coyotes, feral dogs) to the proposed Project site, consequently exposing San Joaquin kit fox to increased risk of injury or mortality. San Joaquin kit fox could enter the Project Area at night and become injured or entrapped if holes or trenches are left open overnight and not properly ramped for exit. Impacts to this species would be considered significant. Avoidance and minimization measures to protect San Joaquin kit fox from potential impacts are included and described further in the Mitigation Measures section.

Implementation of the proposed Project could potentially impact individual and/or nesting resident or migratory bird species, should they become established within the proposed Project site prior to Project implementation. Impacts to migratory bird species could occur through crushing by construction and drilling equipment during implementation of proposed Project activities. Actively nesting birds could also be affected due to noise and vibration from proposed Project activities, if nests are located closer than 250 feet to the proposed Project site. Project related noise and vibration could cause disruption of breeding behavior and the abandonment of active nest sites. Impacts to these species would be considered significant. In the event that nesting birds are present or become established in the proposed Project site, avoidance, and minimization measures to protect these species from potential impacts are described further in the Mitigation Measures section.

Direct mortality or injury to sensitive animal populations could occur from earth-moving activities, assuming that sensitive animal populations become established prior to or during project implementation. Avoidance and minimization measures to protect sensitive animal species from potential impacts are described further in the Mitigation Measures section. Pre-disturbance surveys are recommended prior to surface disturbance associated with well site preparation (i.e., grading and compacting) to determine whether conditions have changed in the proposed Project site.

Direct mortality or injury to common wildlife and plant populations could occur during ground disturbance activities associated with implementation of the proposed project. Small vertebrate, invertebrate, and plant species are particularly prone to impact during project implementation because they are much less mobile and cannot easily move out of the

path of project activities. Other more mobile wildlife species, such as most birds and larger mammals, can avoid project-related activities by moving to other adjacent areas temporarily. Increased human activity and vehicle traffic in the vicinity may disturb some wildlife species. However, common wildlife species have likely become acclimated to on-going agricultural activities. Because common wildlife species found in the proposed Project site are locally and regionally common, potential impacts to these resources are considered less than significant. Therefore, no mitigation measures are proposed at this time for common wildlife and plants.

Traffic in the Project vicinity consists predominantly of agricultural equipment. A short-term increase in vehicle traffic is anticipated during Project implementation, which will result in a short-term increase in associated noise, which may cause temporary disturbance to common wildlife species. Those species observed during biological surveys appear to have acclimated to ongoing agricultural activities near the proposed Project site.

If the proposed oil and gas well proves productive, production equipment would be installed on site. Special-status species could potentially be impacted during this phase of the project. Direct mortality, injury, or crushing could occur from vehicles or equipment used for production equipment installation, assuming a sensitive species or population becomes established in the project site. Mitigation measures to protect sensitive and special-status plant and animals from potential impacts during this phase are described below.

Based on biological surveys for the proposed Project, Booher Consulting determined that there is potential for San Joaquin kit fox, Lawrence's goldfinch, and tricolored blackbird to travel through and/or forage in the proposed Project site. As a result of mobility, the occurrence of these species cannot be discounted. The Project will result in loss of 0.91 acres of annual grassland habitat, and two (2) burrows that represent potential for San Joaquin kit fox will be impacted during site preparation. Pre-disturbance surveys, nesting bird surveys (season specific), and potential den monitoring is required prior to initial surface disturbance. To ensure there are no impacts to special-status species, KEBO would implement **Mitigation Measures BIO-1 through BIO-20**. The proposed Project would have a less than significant impact on special-status species.

Furthermore, the proposed Project is consistent with the Tulare County General Plan Framework Concept 4: Natural and Cultural Resources of the Tulare County General Plan (Tulare County 2012); the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques. Additionally, the Tulare County General Plan Environmental Resource Management sections (ERM 3.3, ERM 3.4 and ERM 3.5) state that the County shall allow oil and gas extraction activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land.

- b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*

No valley saltbush scrub, wetland, streams, rivers, riparian areas, or other sensitive community types were observed within the footprint of the proposed Project site. Therefore, the proposed

Project would not have any substantial adverse effect on sensitive natural communities. No impact.

- c) ***Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?***

No federally protected wetland habitat was observed within the footprint of the proposed Project site, existing access roads, proposed access roads, or buffer areas during the biological surveys and assessment. Therefore, the proposed Project would not have any substantial adverse effect on federally protected wetlands. No impact.

- d) ***Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?***

The proposed Project would not interfere with movement of any wildlife species or with established native resident or migratory wildlife corridors. Native resident and/or migratory fish and known native wildlife nursery sites are not present within the proposed Project site or buffer areas. No impact.

- e) ***Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?***

The Project as proposed would not conflict with any local policies or ordinances protecting biological resources, such as tree preservation policies/ordinances. No native trees are present within the proposed Project site; therefore, no impact.

- f) ***Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community, Conservation Plan, or other approved local, regional, or state habitat conservation plan?***

There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or State habitat conservation plans covering the proposed Project site. However, the proposed Project occurs within the Tulare County General Plan area (Tulare County 2012). The proposed Project is consistent with the Tulare General Plan framework for protection of biological resources. No conflict is anticipated with any conservation plans.

3.5.4.4 Mitigation Measures

In order to reduce potential impacts to biological resources to a less than significant level, the following mitigation measures would be implemented for the proposed Project:

- BIO-1** - Environmental Awareness Training will be presented to all personnel working in the field on the proposed Project site. Training shall consist of a brief presentation

in which a biologist knowledgeable of endangered species biology and legislative protections will explain endangered and threatened species concerns. Training will include a discussion of special-status plants and wildlife species. Species biology, habitat needs, status under the Endangered Species Act, and protection under the Migratory Bird Treaty Act will be discussed. In addition, measures being incorporated for the protection of these species and their habitats will also be discussed.

BIO-2 - A biological pre-disturbance survey of the proposed Project will be conducted by a qualified biologist no more than 14 days prior to starting Project activities. If no work occurs within 14 days of surveys, additional surveys may be required so they remain current.

- a. If no special-status species are identified within the Project site, and conditions have not changed, then construction activities may proceed.
- b. If special-status species or habitat features (i.e., burrows, dens, nests, etc.) are observed during pre-disturbance surveys, additional surveys may be required, and other avoidance and mitigation measures may apply.

BIO-3 - If ground disturbing activities are planned to occur during the breeding season of migratory bird or raptor species (February through mid-September), surveys for nesting birds will be conducted in the Project. Pre-disturbance surveys for nesting birds will be conducted by a qualified biologist no more than 14 days prior to the start of Project activities. If Project activities do not commence within 14 days of nesting bird surveys, additional surveys may be required to remain current.

- a. If no active nest(s) are found in the Project or buffer areas, then Project activities may proceed, and no further mitigation measures will be required.
- b. If active nest(s) of migratory birds and non-listed raptors are found, then exclusion zones will be established a minimum of 250-feet around a nest. Project activities will avoid disturbance within the exclusion zone during the nesting season.

BIO-4 - A qualified biologist will be present during initial surface disturbance to serve as a biological monitor for the Project.

BIO-5 - Project site boundaries shall be clearly delineated by stakes and /or flagging to minimize inadvertent degradation or loss of adjacent lands during Project operations. Staff and/or its contractors shall post signs and/or place fencing around the proposed Project site to restrict access of vehicles and equipment outside the Project boundary.

BIO-6 - A Project representative will establish restrictions on Project-related traffic to approved access routes and the proposed well site. Off-road traffic outside of the designated Project area is prohibited.

BIO-7 - Project-related traffic shall observe a 20-mph speed limit, except on County roads and State highways to avoid impacts to special-status wildlife species.

BIO-8 - Hazardous materials, fuels, lubricants, and solvents that spill accidentally during project-related activities shall be cleaned up and removed from the proposed Project site as soon as possible according to applicable federal, state, and local regulations.

BIO-9- All food-related trash items such as wrappers, cans, bottles, or food scraps generated during Project activities will be disposed of only in closed containers and regularly removed from the proposed Project site. No deliberate feeding of wildlife will be allowed.

BIO-10 - To prevent harassment or mortality of wildlife species via predation, or destruction of their dens or nests, no domestic pets will be permitted on the Project.

BIO-11 - KEBO will implement the following measures (measures 11-19) contained in the USFWS's Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 2011):

- a. For kit fox dens within 200 feet of proposed construction area(s), exclusion zones will be established prior to construction by a qualified biologist. Exclusion zones will be roughly circular with a radius of the following distances measured outward from the entrance:

Potential den	50 feet
Atypical den	50 feet
Known den	100 feet
Natal/pupping den (occupied and unoccupied)	USFWS and CDFW must be contacted

- b. Protective exclusion zones can be placed around all known and potential dens which occur outside the project footprint (conversely, the project boundary can be demarcated).
- c. To ensure protection of known dens, exclusion zones should be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by kit foxes. Acceptable fencing includes untreated wood particle board, silt fencing, or orange construction fencing, as long as it has opening for kit fox ingress/egress and keeps humans and equipment out.

- d. Exclusion zone barriers shall be maintained until all construction related or operational disturbances have been terminated. At that time all fencing shall be removed to avoid attracting subsequent attention to the dens.
- e. For potential and/or atypical dens, placement of 4-5 flagged stakes 50 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required, but the exclusion zone must be observed.
- f. Only essential vehicle operation on existing roads and foot traffic should be permitted. Otherwise, all construction, vehicle operation, material storage, or any type of surface-disturbing activity should be prohibited or greatly restricted within the exclusion zones.

BIO-12 - If a natal/pupping den is discovered within the proposed Project site or within 200-feet of the Project boundaries, the USFWS and CDFW shall be immediately notified and under no circumstances should the den be disturbed or destroyed without prior authorization. If the pre-disturbance survey reveals an active natal pupping den or new information, KEBO should contact the USFWS and CDFW immediately for guidance.

BIO-13 - Destruction of any known or natal/pupping kit fox den requires take authorization/permit from the USFWS and CDFW. Limited destruction of kit fox dens may be allowed, if avoidance is not a reasonable alternative, provided the following procedures are observed:

- a. Known dens occurring within the footprint of the Project must be monitored for three (3) consecutive days with tracking medium or an infra-red camera beam to determine the current use. If no kit fox activity is observed during this period, the den(s) should be destroyed immediately to preclude subsequent use.
- b. If kit fox activity is observed at the den(s) during this period, the den(s) should be monitored for at least five (5) consecutive nights from the time of the observation to allow any resident animal to move to another den during its normal activity. Only when the den(s) are determined unoccupied may the den(s) be excavated.
- c. Destruction of the den(s) should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den(s) should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter to use the den(s) during the construction period. If at any point during excavation, a kit fox is discovered inside the den(s), the excavation activity shall cease immediately and monitoring the den as described above should resume. Destruction of the den(s) may be completed when, in the judgment of the biologist, the animal has escaped without further disturbance, from the partially destroyed den(s).

- BIO-14** - Potential dens occurring within the footprint of the project or within 50 feet must be monitored for three (3) consecutive days with tracking medium or an infra-red camera beam to determine the current use. If no kit fox activity is observed during this period, the den(s) should be destroyed immediately to preclude subsequent use.
- BIO-15** - Destruction of the den(s) should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den(s) should be fully excavated, filled with dirt, and compacted to ensure that kit foxes cannot reenter to use the den during the construction period. If at any point during excavation, a kit fox is discovered inside the den(s), the excavation activity shall cease immediately and monitoring the den(s) should resume, as described above. Destruction of the den may be completed when, in the judgment of the biologist, the animal has escaped without further disturbance, from the partially destroyed den.
- BIO-16** - If any kit fox den is considered to be a potential den, but is later determined during monitoring or destruction to be currently, or previously used by kit fox (e.g., if kit fox sign is found inside), then all construction activities shall cease and the USFWS and CDFW shall be notified immediately.
- BIO-17** - To prevent entrapment of animals during construction, all excavated steep-walled holes, or trenches less than five (5) feet in depth will be covered at the close of each working day with plywood or similar material. For trenches that cannot be closed daily, one or more escape ramps constructed of earthen fill or wooden planks no less than 10 inches in width will be installed and secured to the top for stability. Ramps will be located at no greater than 1,000-foot intervals (for pipelines and trenches) and at no less than 45-degree angles. All excavations greater than five (5) feet in depth will be covered at the end of each workday and when not being worked on. All covered and open excavations will be inspected at the beginning and end of each day (including non-workdays).
- BIO-18** - Immediately before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. Any animals discovered that do not escape on their own immediately will be removed from the trench or hole by a qualified biologist and allowed to escape unimpeded. All discoveries of special-status animals in excavations or trenches will be reported to the CDFW and/or USFWS within 24 hours of the discovery.
- BIO-19** - All pipes, culverts, or similar structures stored at the proposed Project overnight having a diameter of four (4) inches or greater will be inspected thoroughly for wildlife species before being buried, capped, or otherwise used or moved in any way. Pipes laid in trenches overnight will be capped. If during Project implementation a wildlife species is discovered inside a pipe, that segment of pipe will not be moved or, if necessary, moved only once to remove it from the path of Project activity, until the wildlife species has escaped.

BIO-20 - KEBO should designate a Project representative as the contact for any employee or contractor who finds a dead, injured, or entrapped special-status wildlife species. If any special-status species or migratory birds are found dead, injured, or entrapped in the proposed Project site, the CDFW and/or USFWS will be notified within 24 hours.

3.5.4.5 References

California Department of Fish and Wildlife (CDFW). 2019. California Natural Diversity Database. Rare Find 5, for Commercial Subscribers. Habitat Planning and Conservation Branch. Electronic Database.

California Native Plant Society (CNPS). 2019. Inventory of Rare, Threatened, and Endangered Plants (online edition, v8-02). California Native Plant Society. Sacramento, CA. Accessed on August 26, 2019.

Booher Consulting, LLC. 2019. Biological Assessment, KEBO Oil and Gas, Inc. CRPC et. al. #B-1 Exploratory Well Project, Tulare County, California. November 2019. 48 pp.

Tulare County Resource Management Agency. 2012. Tulare County General Plan 2030 Update. Visalia, CA. August 2012. 1187 pp.

United States Code. 1918. Migratory Bird Treaty Act. 16 U.S.C. §§703–712. Revised August 2006.

United States Fish and Wildlife Service (USFWS). 2019. U.S. Fish & Wildlife Sacramento Fish & Wildlife Office. Website Address:
http://sacramento.fws.gov/es/spp_lists/QuickList.cfm. 26 August 2019.

-----, 2011. U.S. Fish and Wildlife Service Standardized Recommendations for Protection of The Endangered San Joaquin Kit Fox Prior To Or During Ground Disturbance. Prepared by the Sacramento Fish and Wildlife Office. January 2011. 9 pp.

-----, 1998. *Recovery plan for upland species of the San Joaquin Valley, California*. Region 1, Portland, OR. 319 pp.

SECTION 3.5.5 – Cultural Resources

ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
CULTURAL RESOURCES <i>Would the project:</i>				
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	_____	X	_____	
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	_____	X	_____	
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	_____	X	_____	
d. Disturb any human remains, including those interred outside of formal cemeteries?	_____	X	_____	_____

3.5.5.1 Environmental Setting

ASM Affiliates conducted an intensive Phase I archaeological survey for the proposed project. Background studies and fieldwork for the survey were completed in August 2019. An archival records search was conducted at the California State University, Bakersfield, Southern San Joaquin Valley Archaeological Information Center (AIC), by IC staff to determine: (i) if prehistoric or historical archaeological sites had previously been recorded within the project study area; (ii) if the project area had been systematically surveyed by archaeologists prior to the initiation of this field study; and/or (iii) whether the region of the field project was known to contain archaeological sites and to thereby be archaeologically sensitive. Additionally, a search of the NAHC *Sacred Lands File* was conducted in order to ascertain whether traditional cultural places or cultural landscapes had been identified within the proposed project site. Both records searches were conducted on July 22, 2019. The records search at the AIC indicated that no cultural resources had been previously recorded within the study area or within a half-mile radius of it. Only one previous study had occurred within a half-mile radius (IC report # TU-1465), with negative results. Based on the records search results, the study area appeared to have low archaeological and tribal cultural resources sensitivity. Additionally, the NAHC *Sacred Lands File* did not indicate the presence of any sacred sites or tribal cultural resources within the project area.

The Phase I survey fieldwork was conducted on August 27, 2019 with parallel transects spaced at 15-meter (m) intervals walked across the 52 acres project study area. The field methods employed included intensive, on-foot examination of the ground surface for evidence of archaeological sites, in the form of artifacts, surface features (such as bedrock mortars, historical

oil industry equipment), and archaeological indicators (e.g., organically enriched midden soil, burnt animal bone); the identification and location of any new or previously discovered sites; tabulation and recording of surface diagnostic artifacts; site photography and sketch mapping; preliminary evaluation of site integrity; and site recording following the California Office of Historic Preservation Instructions for Recording Historic Resources, using DPR 523 forms. No collection of archaeological remains occurred during the inventory. As previously stated, the proposed project site consists of an existing landfill and pit and surrounding terrain. Ground-surface visibility was good to excellent, with low to moderate density introduced grasses in some areas. Transect spacing was reduced in these areas, with special attention paid to rodent burrows and other areas of exposed soil. The study area, however, was found to be very heavily disturbed, with evidence of extensive grading and dumping (Figure 2). This level of disturbance effectively would preclude the preservation of cultural resources. No cultural resource sites or isolates were identified within the 52-acre study area. A copy of the ASM Affiliates' report is attached (Appendix D).

A paleontological resource investigation was performed for the proposed project by Kate McComas, Paleontological Report Writer and GIS Specialist with the San Diego Natural History Museum (SDNHM) on August 7, 2019 (see Appendix E). Published geologic maps and reports indicated that the proposed project site has the potential to impact Pleistocene-age older alluvium. Pleistocene-age (approximately 2.5 million to 11,700 years old) alluvial deposits (mapped by Bartow, 1984, as older alluvium, unit 2; Qoa2) underlie the proposed project site at the surface. These deposits generally consist of clay, silt, sand, and/or gravel underlying higher river terraces and older alluvial fans in this area (Bartow, 1984). The SDNHM does not have any localities from these deposits within a 1-mile radius of the proposed project site. Based on the documented occurrence of vertebrate fossils in Pleistocene alluvial deposits in Tulare County, these deposits are assigned a high paleontological potential. Proposed surficial site preparation construction activities (less than 5 feet below current grade) will not result in impacts to paleontological resources and will not require mitigation. No paleontological mitigation is required for the drilling phase of the proposed project. A copy of the Paleontological Records Search Report is attached (Appendix E).

3.5.5.2 Regulatory Setting

Federal

Section 106 of the National Historic Preservation Act

Archaeological resources are protected through the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470f), and its implementing regulation, Protection of Historic Properties (36 CFR Part 800); the Archaeological and Historic Preservation Act of 1974; and the Archaeological Resources Protection Act of 1979. Prior to implementing an "undertaking" (e.g., issuing a federal permit), Section 106 of the NHPA requires federal agencies to consider the effects of the undertaking on historic properties and afford the Advisory Council on Historic Preservation and the State Historic Preservation Officer a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register of Historic Places (NRHP). As indicated in Section 101 (d)(6)(A) of the NHPA,

properties of traditional religious and cultural importance to a tribe are eligible for inclusion in the NRHP. Under the NHPA, a resource is considered significant if it meets the NRHP listing criteria at 36 CFR 60.4.

National Register of Historic Places

The National Register of Historic Places (NRHP) was established by the NHPA of 1966 as “an authoritative guide to be used by Federal, State, and local governments; private groups; and citizens to identify the nation’s historic resources and indicate what properties should be considered for protection from destruction or impairment” (36 CFR 60.2). The NRHP recognizes both historical-period and prehistoric archaeological properties that are significant at the national, State, and local levels. In the context of the project, which does not involve any historical-period structures, the NRHP criteria below are given as the basis for evaluating archaeological resources.

To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (U.S. Department of the Interior 1995):

- The resource is associated with events that have made a significant contribution to the broad patterns of our history.
- The resource is associated with the lives of persons significant in our past.
- The resource embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master or possesses high artistic values or represents a significant and distinguishable entity whose components may lack individual distinction; and
- The resource has yielded, or may be likely to yield, information important to prehistory or history.
- Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for NRHP listing (U.S. Department of the Interior 1995).

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as “the ability of a property to convey its significance” (U.S. Department of the Interior 1995). The NRHP recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven (7) factors that define integrity are location, design, setting, materials, workmanship, feeling, and association.

State

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that public agencies consider the effects of their actions on both “historical resources” and “unique archaeological resources.”

According to PRC Section 21084.1, a “project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” Section 21083.2 requires agencies to determine whether proposed projects would have effects on unique archaeological resources.

“Historical resource” is a term with a defined statutory meaning (PRC, Section 21084.1 and CEQA Guidelines, Section 15064.5 [a], [b]). The term includes any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR). The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, and many California Historical Landmarks and California Points of Historical Interest.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the California Register and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC § 5024.1, 14 CCR § 4850). Unless a resource listed in a survey has lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource to be potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process (PRC 5024.1[g]), lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project’s impacts to historical resources (PRC, Section 21084.1 and CEQA Guidelines, Section 15064.5[a][3]). Following CEQA Guidelines Section 15064.5(a) and (b), a historical resource is defined as any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historical significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resources, provided the lead agency’s determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be “historically significant” if the resource meets the criteria for listing on the CRHR (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852) including the following:

- 1) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.
- 2) Is associated with the lives of persons important in our past.
- 3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- 4) Has yielded, or may be likely to yield, information important in prehistory or history.

Archaeological resources may also qualify as historical resources, and PRC 5024 requires consultation with the Office of Historic Preservation (OHP) when a project may impact historical resources located on State-owned land.

For historic structures, CEQA Guidelines Section 15064.5, subdivision (b)(3), indicates that a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995) shall mitigate impacts to a level of less than significant. Potential eligibility also rests upon the integrity of the resource. Integrity is defined as the retention of the resource's physical identity that existed during its period of significance. Integrity is determined through considering the setting, design, workmanship, materials, location, feeling, and association of the resource.

As noted above, CEQA also requires lead agencies to consider whether projects would impact unique archaeological resources. PRC Section 21083.2, subdivision (g), states that "unique archaeological resources means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- 1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- 2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- 3) Is directly associated with a scientifically recognized important prehistoric or historic event or person."

Treatment options under Section 21083.2 include activities that preserve such resources in place in an undisturbed state. Other acceptable methods of mitigation under Section 21083.2 include excavation and curation or study in place without excavation and curation (if the study finds that the artifacts would not meet one or more of the criteria for defining a unique archaeological resource).

Advice on procedures to identify cultural resources, evaluate their importance, and estimate potential effects is given in several agency publications such as the series produced by the Governor's Office of Planning and Research (OPR). The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including but not limited to museums, historical commissions, associations and societies, be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains.

Section 7050.5(b) of the California Health and Safety Code specifies protocol when human

remains are discovered. The code states:

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

CEQA Guidelines Section 15064.5, subdivision (e), requires that excavation activities be stopped whenever human remains are uncovered, and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the Native American Heritage Commission (NAHC) must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as identified by the NAHC. Section 15064.5 directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

In addition to the mitigation provisions pertaining to the accidental discovery of human remains, the CEQA Guidelines also require that a lead agency make provisions for the accidental discovery of historical or archaeological resources. Pursuant to Section 15064.5, subdivision (f), these provisions should include “an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be a historical or unique archaeological resource, contingency funding, and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place.”

As of March 1, 2005, Senate Bill 18 (Gov. Code, Sections 65352.3, 65352.4) requires that, prior to the adoption or amendment of a general plan or a specific plan proposed on or after March 1, 2005, a city or county must consult with Native American tribes with respect to the possible preservation of, or the mitigation of impacts to, specified Native American places, features, and objects located within that jurisdiction.

California Public Records Act

Sections 6254(r) and 6254.10 of the California Public Records Act were enacted to protect archaeological sites from unauthorized excavation, looting, or vandalism. Section 6254(r) explicitly authorizes public agencies to withhold information from the public relating to “Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission.” Section 6254.10 specifically exempts from disclosure requests for “records that

relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the NAHC, another State agency, or a local agency, including records that the agency obtains through a consultation process between a Native American tribe and a State or local agency.”

California Penal Code, Section 622.5

California Penal Code Section 622.5 provides misdemeanor penalties for injuring or destroying objects of historic or archaeological interest located on public or private lands but specifically excludes the landowner.

Public Resources Code, Section 5097.5

Paleontological resources are classified as nonrenewable scientific resources and are protected by state statute. PRC Section 5097.5 states that no person shall knowingly and would fully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands (lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof), except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

California Code of Regulations Title 14, Division 3, Chapter 1

CCR Title 14, Division 3, Chapter 1 is applicable to lands administered by the California Department of Parks and Recreation (DPR), addressing paleontological resources as follows:

- 1) Section 4307: Geological Features - "No person shall destroy, disturb, mutilate, or remove earth, sand, gravel, oil, minerals, rocks, paleontological features, or features of caves."
- 2) Section 4309: Special Permits - "The Department may grant a permit to remove, treat, disturb, or destroy plants or animals or geological, historical, archaeological or paleontological materials; and any person who has been properly granted such a permit shall to that extent not be liable for prosecution for violating the forgoing."

Local

Tulare County General Plan

The policies, goals, and implementation measures in the Tulare County General Plan for cultural resources applicable to the project are provided below. The Tulare County General Plan contains additional policies, goals, and implementation measures that are more general in nature and are not specific to development such as the proposed project. Therefore, they are not listed below, but all policies, goals, and implementation measures in the Tulare County General Plan are

incorporated by reference.

ERM-6.1 Evaluation of Cultural and Archaeological Resources

The County shall participate in and support efforts to identify its significant cultural and archaeological resources using appropriate State and Federal standards.

ERM-6.2 Protection of Resources with Potential State or Federal Designations

The County shall protect cultural and archaeological sites with demonstrated potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources. Such sites may be of Statewide or local significance and have anthropological, cultural, military, political, architectural, economic, scientific, religious, or other values as determined by a qualified archaeological professional.

ERM-6.3 Alteration of Sites with Identified Cultural Resources

When planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. Development can be permitted in these areas only after a site specific investigation has been conducted pursuant to CEQA to define the extent and value of resource, and mitigation measures proposed for any impacts the development may have on the resource.

ERM-6.4 Mitigation

If preservation of cultural resources is not feasible, every effort shall be made to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records.

ERM-6.6 Historic Structures and Sites

The County shall support public and private efforts to preserve, rehabilitate, and continue the use of historic structures, sites, and parks. Where applicable, preservation efforts shall conform to the current Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.

ERM-6.7 Cooperation of Property Owners

The County should encourage the cooperation of property owners to treat cultural resources as assets rather than liabilities, and encourage public support for the preservation of these resources.

ERM-6.8 Solicit Input from Local Native Americans

The County shall continue to solicit input from the local Native American communities in cases where development may result in disturbance to sites containing evidence of Native American activity and/or to sites of cultural importance.

ERM-6.9 Confidentiality of Archaeological Sites

The County shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.

ERM-6.10 Grading Cultural Resources Sites

The County shall ensure all grading activities conform to the County's Grading Ordinance and California Code of Regulations, Title 20, § 2501 et. seq.

3.5.5.3 Impact Analysis

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

The records search, paleontological records search, pedestrian survey, and Native American Consultation did not identify any cultural or historic resources at the proposed project site. Based on these results, the proposed project is not anticipated to affect any historical resources; however, during construction activities cultural or historic resources may be unearthed. Compliance with **Mitigation Measure CUL-1** would reduce the potential impact to a less than significant level.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5?

The records search, paleontological records search, pedestrian survey, and Native American Consultation did not identify any cultural or historic resources at the proposed project site. The proposed project would include notification of personnel prior to ground disturbing activities of the possibility of buried prehistoric or historic cultural deposits. In the unlikely event prehistoric or historical cultural deposits are unearthed, compliance with mitigation measure Cultural 1 would reduce the potential impact to a less than significant level.

c) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The paleontological records search, records search, pedestrian survey, and Native American Consultation did not identify any paleontological resource or site or unique geologic feature at the proposed project site. The proposed project would include notification of personnel prior to ground disturbing activities of the possibility of buried paleontological resources. In

the unlikely event paleontological resources are observed, compliance with mitigation measure Cultural 2 would reduce the potential impact to a less than significant level.

d) *Would the project disturb any human remains, including those interred outside of formal cemeteries?*

The records search, paleontological records search, pedestrian survey, and Native American Consultation did not identify any known burials or informal cemeteries at the proposed project site. In the unlikely event that human remains are encountered, compliance with mitigation measure Cultural 3 would reduce the potential impact to a less than significant level.

3.5.5.4 Mitigation Measures

In order to reduce potential impacts to cultural resources to a less than significant level, the following mitigation measures would be implemented:

Cultural 1 – In the unlikely event archeological resources are identified on the project site, all ground disturbing activities would cease, and a qualified archaeologist would be retained by KEBO to assess the significance of any find. The archaeologist would have the authority to stop or divert the construction excavation as necessary. The archaeologist would evaluate the find in conformance with section 15064.5 of CEQA Guidelines. A plan to mitigate any adverse impacts would be prepared by the archaeologist and contain procedures to follow. Work may proceed on the site once evaluation of the find is complete.

Cultural 2 – In the unlikely event paleontological resources are identified on the project site, a qualified paleontologist would be retained by KEBO to assess the significance of any find and would have the authority to stop or divert the construction excavation as necessary. A plan to mitigate any adverse impacts would be prepared by the paleontologist and contain procedures to follow. Work may proceed on the site once evaluation of the find is complete.

Cultural 3 – In the unlikely event human remains are discovered during construction of the project site, site personnel would contact the County Coroner and stop work as required by Public Resources Code §5097.98-99 and Health and Safety Code §7050.5. If the remains are determined to be Native American, the County Coroner would notify the NAHC in accordance with PRC §5097.98. KEBO shall, in consultation with the identified descendants of the remains and/or NAHC, identify the appropriate measures for treatment or disposition of the remains.

3.5.5.5 References

ASM Affiliates. 2019. *Phase 1 Archaeological Survey, KEBO CRPC et. al. #B-1 Well Pad, Tulare County, California*. November 2019.

San Diego Natural History Museum. 2019, *Paleontological Record Search, CRPC et. al. #B-1 Project*. August 2019.

U.S. Department of the Interior. 1995.

California Public Resources Code §5097.98-99, 15064.5

California Health and Safety Code §7050.5

SECTION 3.5.6 – Energy

ISSUES	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
ENERGY <i>Would the project:</i>				
e. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	_____	_____	_____	X
f. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	_____	_____	_____	X

3.5.6.1 Environmental Setting

The proposed project site is situated within unincorporated area of Tulare County. The proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. Agriculture in proximity to the proposed project site spans an area approximately one (1) square mile in all directions from the proposed project site. The Sequoia National Forest is located to the east and the Temblor (Coast) Mountain Range is located to the west of the proposed project site.

The nearest residential structure is located 1.01 miles to the northwest of the proposed project site. No designated scenic roadways are located adjacent to or in the vicinity of the proposed project site. No significant scenic resources are located at or near the proposed project site. Site photographs and photo simulations of the proposed project follow (Photographs 1 through 4 and Figures 4, 5 and 6).

3.5.6.2 Regulatory Setting

Federal

Federal Energy Policy Act of 2005

The Energy Policy Act of 2005 seeks to reduce reliance on non-renewable energy resources and provide incentives to reduce current demand on these resources. For example, under the Act, consumers and businesses can obtain federal tax credits for purchasing fuel efficient appliances and products, including buying hybrid vehicles, building energy-efficient buildings, and

improving the energy efficiency of commercial buildings. Additionally, tax credits are available for the installation of qualified fuel cells, stationary microturbine power plants, and solar power equipment.

State

State California Energy Commission

The California Energy Commission CEC was created in 1974 to serve as the state's primary energy policy and planning agency. The CEC is tasked with reducing energy costs and environmental impacts of energy use - such as greenhouse gas emissions - while ensuring a safe, resilient, and reliable supply of energy. State of California Integrated Energy Policy (SB 1389) In 2002, the Legislature passed Senate Bill 1389, which required the California Energy Commission (CEC) to develop an integrated energy plan every two years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. The plan calls for the state to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for Zero Emission Vehicles and their infrastructure needs, and encouragement of urban designs that reduce vehicles miles traveled and accommodate pedestrian and bicycle access. The CEC adopted the 2013 Integrated Energy Policy Report on February 20, 2014. The 2013 Integrated Energy Policy Report provides the results of the CEC's assessment of a variety of issues, including:

- Ensuring that the state has sufficient, reliable, and sage energy infrastructure to meet current and future energy demands.
- Monitoring publicly owned utilities' progress towards achieving 10-year energy efficiency targets; defining and including zero-net-energy goals in state building standards.
- Overcoming challenges to increased use of geothermal heat pump/ground loop technologies and procurement of biomethane.
- Using demand response to meet California's energy needs and integrate renewable — technologies.
- Removing barriers to bioenergy development; planning for California's electricity infrastructure needs given potential retirement of power plants and the closure of the San Onofre Nuclear Generating Station.
- Estimating new generation costs for utility-scale renewable and fossil-fueled generation.
- Planning for new or upgraded transmission infrastructure.
- Monitoring utilities' progress in implementing past recommendations related to nuclear power plants.
- Tracking natural gas market trends.
- Implementing the Alternative and Renewable Fuel and Vehicle Technology Program; and,
- Addressing the vulnerability of California's energy supply and demand infrastructure to the effects of climate change; and planning for potential electricity system needs in 2030.

California Global Warming Solutions Act of 2006 (Assembly Bill 32)

California Global Warming Solutions Act of 2006 (Assembly Bill 32) Assembly Bill 32 (Health and Safety Code Sections 38500– 38599; AB 32), also known as the California Global Warming Solutions Act of 2006, commits the state to achieving year 2000 GHG emission levels by 2010 and year 1990 levels by 2020. To achieve these goals, AB 32 tasked the California Public Utilities Commission and CEC with providing information, analysis, and recommendations to the California Air Resources Board regarding ways to reduce GHG emissions in the electricity and natural gas utility sectors.

California Energy Code (Title 24, Part 6, Building Energy Efficiency Standards)

California Code of Regulations Title 24, Part 6 comprises the California Energy Code, which was adopted to ensure that building construction, system design and installation achieve energy efficiency. The California Energy Code was first established in 1978 by the CEC in response to a legislative mandate to reduce California's energy consumption, and apply to energy consumed for heating, cooling, ventilation, water heating, and lighting in new residential and non-residential buildings. The standards are updated periodically to increase the baseline energy efficiency requirements. The 2013 Building Energy Efficiency Standards focus on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings and include requirements to enable both demand reductions during critical peak periods and future solar electric and thermal system installations. Although it was not originally intended to reduce greenhouse gas (GHG) emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

Clean Energy and Pollution Reduction Act (SB 350)

The Clean Energy and Pollution Reduction Act (SB 350) was passed by California Governor Brown on October 7, 2015, and establishes new clean energy, clean air, and greenhouse gas reduction goals for the year 2030 and beyond. SB 350 establishes a greenhouse gas reduction target of 40 percent below 1990 levels for the State of California, further enhancing the ability for the state to meet the goal of reducing greenhouse gas emissions by 80 percent below 1990 levels by the year 2050.

Renewable Portfolio Standard (SB 1078 and SB 107)

Established in 2002 under SB 1078, the state's Renewables Portfolio Standard (RPS) was amended under SB 107 to require accelerated energy reduction goals by requiring that by the year 2010, 20 percent of electricity sales in the state be served by renewable energy resources. In years following its adoption, Executive Order S-14-08 was signed, requiring electricity retail sellers to provide 33 percent of their service loads with renewable energy by the year 2020. In 2011, SB X1-2 was signed, aligning the RPS target with the 33 percent requirement by the year 2020. This new RPS applied to all state electricity retailers, including publicly owned utilities, investor-owned utilities, electrical service providers, and community choice aggregators. All

entities included under the RPS were required to adopted the RPS 20 percent by year 2020 reduction goal by the end of 2013, adopt a reduction goal of 25 percent by the end of 2016, and meet the 33 percent reduction goal by the end of 2020. In addition, the Air Resources Board, under Executive Order S-21-09, was required to adopt regulations consistent with these 33 percent renewable energy targets.

Local

Local Tulare County General Plan 2030 Update The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: *ERM-4.1 Energy Conservation and Efficiency Measures* wherein the County encourages the use of solar energy, solar hot water panels, and other energy conservation and efficiency features; *ERM-4.3 Local and State Programs* wherein the County shall participate, to the extent feasible, in local and State programs that strive to reduce the consumption of natural or man-made energy sources.

3.5.6.3 Impact Analysis

a) and b) No Impact: The proposed Project will not have a direct or cumulative impact, or create wasteful, inefficient, or unnecessary consumption of energy resources during project construction-related activities or operations. Also, it will not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. The only energy consumed would be through the use of fossil fuels (gasoline and diesel operated equipment) during construction-related activities which will be completed in approximately 207.5 days. As such, the Project will result in no adverse impact to this resource.

3.5.6.4 Mitigation Measures

No impact identified. No mitigation necessary.

3.5.6.5 References

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SECTION 3.5.7 – Geology and Soils

ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
GEOLOGY AND SOILS <i>Would the project:</i>				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Landslides?	_____	_____	_____	X
ii. Strong seismic ground shaking?	_____	_____	_____	X
iii. Seismic-related ground failure, including liquefaction?	_____	_____	_____	X
b. Result in substantial soil erosion or the loss of topsoil?	_____	_____	_____	X
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	_____	_____	_____	X
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1194), creating substantial risks to life or property?	_____	_____	_____	X
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	_____	_____	_____	X

3.5.7.1 Environmental Setting

The proposed project site is located within the eastern edge of the Tulare Basin just northeast of Delano area east of the nearby Highway 99 approximately 10 miles, west of Highway 65 approximately 3.7 miles and north of Highway 155 approximately 6.5 miles. The proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. An existing farm access road provides access to the proposed project site. The proposed project site topography is generally flat with no water bodies.

Regional Geological Setting

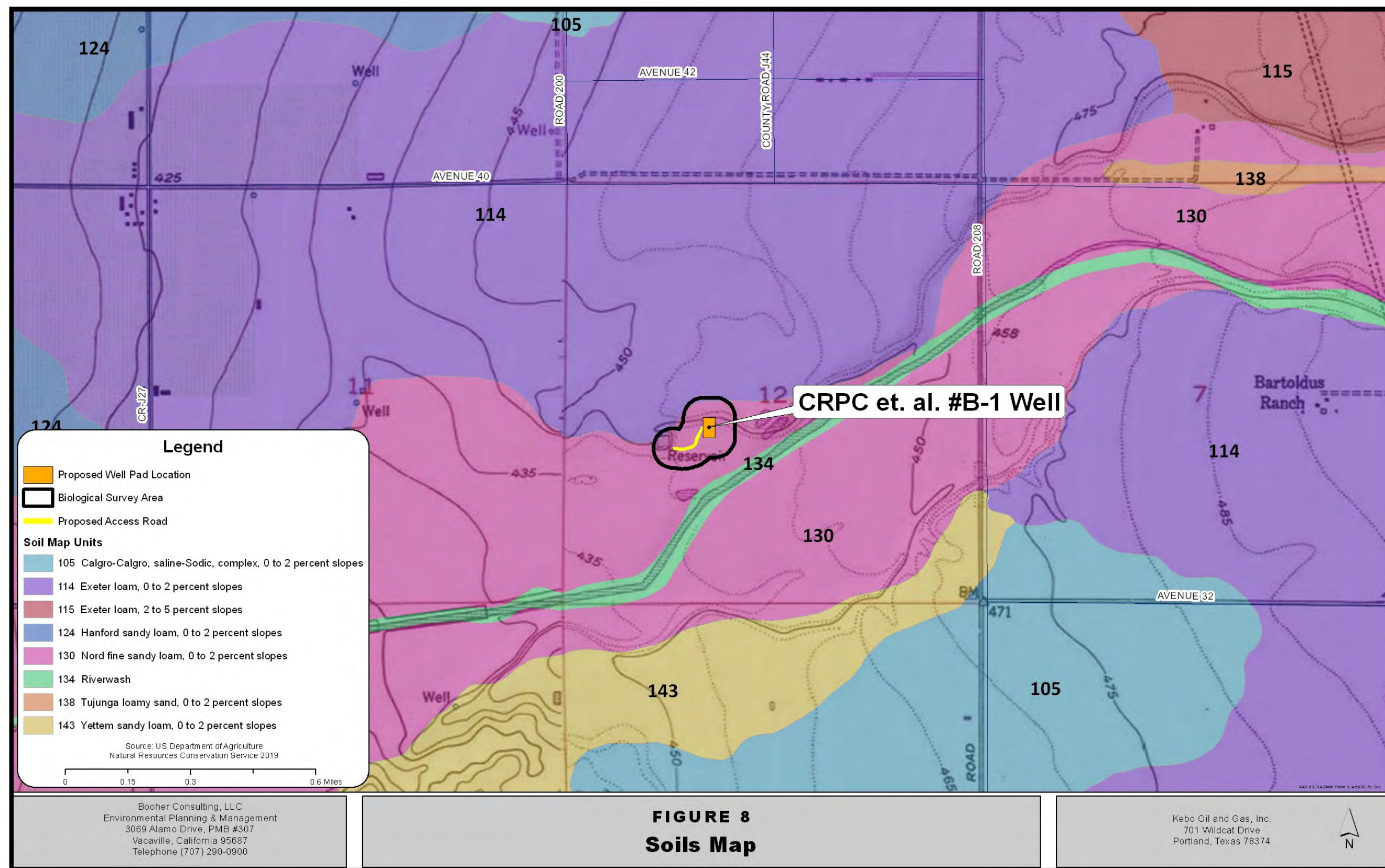
The proposed project site is located in the Great Valley Geomorphic Province of California, which is an alluvial plain about 50 miles wide and 400 miles long. The Great Valley comprises the Sacramento Valley in the north and the San Joaquin Valley in the south. The alluvial plain is composed of thousands of feet of sedimentary deposits that have undergone periods of subsidence and uplifting over millions of years. Most of the surface of the Great Valley is covered with Recent (Holocene, i.e., 10,000 years before present to present day) and Pleistocene (i.e., 10,000 to 1,800,000 years before present) alluvium. This alluvium is composed of sediments from the Sierra Nevada to the east and the Coast Range to the west that were carried by water and deposited on the valley floor. Siltstone, claystone, and sandstone are the primary types of sedimentary deposits. Surface elevations within the Great Valley generally range from several feet below mean sea level (msl) to more than 1,000 feet above mean sea level (msl).

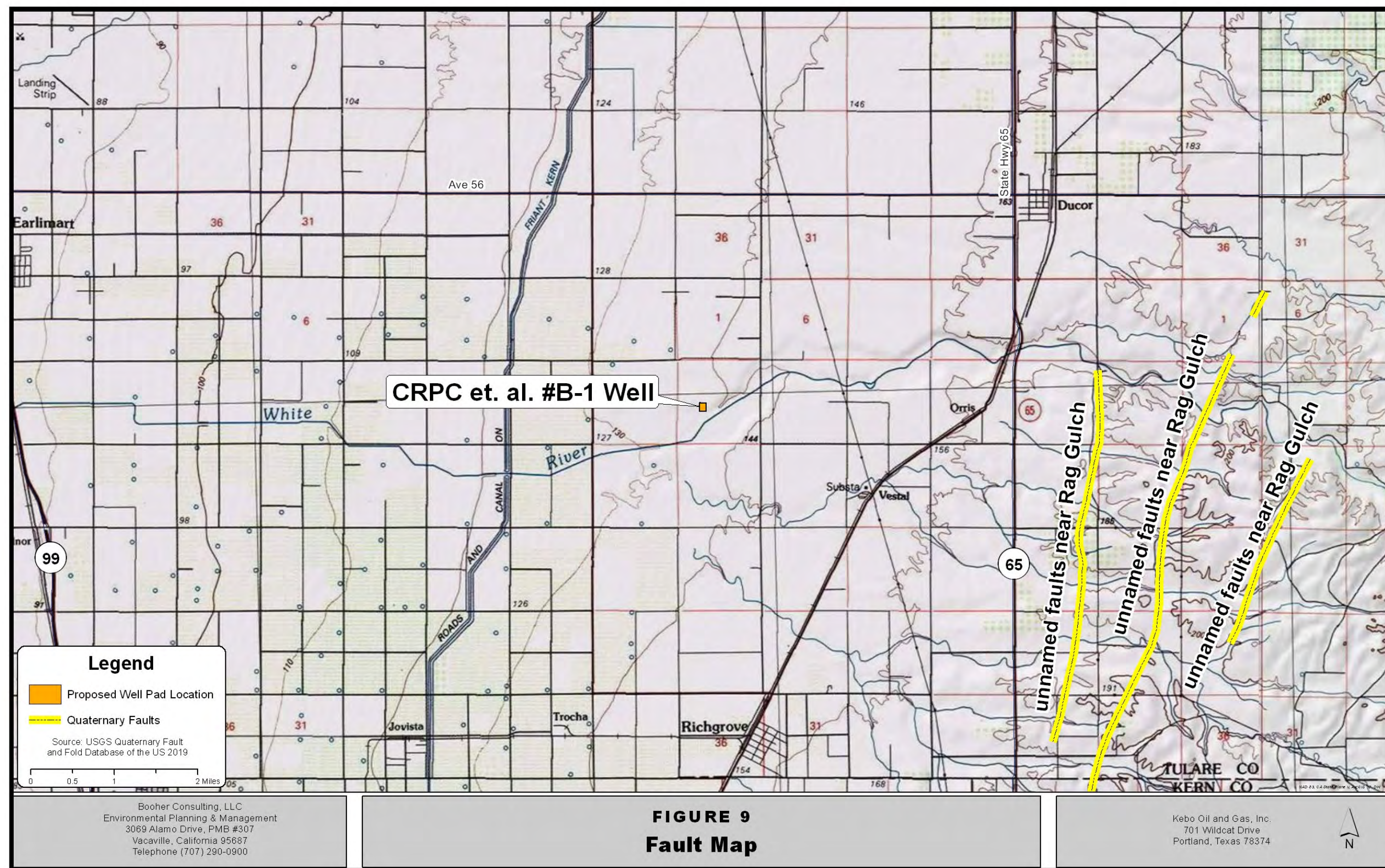
The proposed project site is located near the southeastern portion of Tulare County and northeastern area of Kern County at an elevation of approximately 515 feet above mean sea level (msl). The General Soil Map for Tulare County and Kern County Northeastern Part (compiled 1985) indicates that the general project area is located within Delano-Pleito-Hesperia soils which are deep, nearly level to moderately sloping, well drained gravelly sandy loam and fine sandy loam on flood plains, alluvial fans, alluvial plains and terraces.

According to United States Department of Agriculture Natural Resource Conservation Service mapping, the soil at the proposed project area is identified as Soil Unit 130 – Nord fine sandy loam with 0 to 2 percent slopes - which is a deep, well-drained soil on alluvial fans and flood plains (see Figure 8).

The Nord fine sandy loam is described as a deep, well-drained soil on alluvial fans, flood plains, and low terraces. Typically, the surface layer is light grayish-brown fine sandy loam up to 20 inches thick. The substratum is at a depth of 60 inches or more and is a pale olive sandy loam. In some areas the surface layer is loam. The permeability of this Nord soil is moderate and moderately slow in saline-sodic phases. Runoff is slow, and the hazard of water erosion is slight.

The proposed project site is located in a seismically active region subject to future seismic shaking during earthquakes generated by active faults. An unnamed fault is located approximately 4.7 miles to the east (See Figure 9), and the Poso Creek Fault is located 19 miles south of the proposed project site. The San Andreas Fault Cholame-Carrizo section is located approximately 48.5 miles southwest of the proposed project site. The San Andreas Fault is a right-lateral strike slip fault that extends over 700 miles from the Gulf of California to Cape Mendocino in northern California. Several historic earthquakes on the San Andreas Fault zone have produced significant ground shaking in Kern County. The most notable example is the January 9, 1857 Fort Tejon Earthquake, one of the greatest earthquakes ever recorded in the United States. The Fort Tejon Earthquake produced a surface rupture over 217 miles in length along the San Andreas Fault from Cholame on the north to the Cajon Pass area on the south. The epicenter of the Fort Tejon Earthquake was located approximately 38.67 miles south of the proposed project site. This earthquake which was estimated to be near magnitude 8 produced an average slip of 15 feet and a maximum slip of 30 feet in the Carrizo Plain area. The Wheeler





Ridge fault experienced an earthquake in 1993 with a magnitude of 5.2 and is located approximately 37 miles south of the proposed project site. Accordingly, the proposed project would potentially be subject to future seismic shaking and strong ground motion resulting from seismic activity along local and more distant active faults. However, the proposed project site is not included within the boundaries of an “Earthquake Fault Zone,” as defined by the State of California in the Alquist - Priolo Earthquake Fault Zoning Act.

Soil liquefaction is a phenomenon which can potentially occur during periods of oscillatory ground motion caused by an event such as an earthquake. The pore water in a loose, saturated granular soil and some fine-grained soils increases to the point where the effective stress in the soil is zero and the soil loses a portion of its shear strength (initial liquefaction). Structures founded on or above potentially liquefiable soils may experience bearing capacity failures, vertical settlement (both total and differential) and lateral displacement (due to lateral spreading of the ground). The factors known to influence liquefaction potential includes soil characteristics (particle size, distribution, plasticity, water content), relative density, presence or absence of groundwater, stress tensor (effective confining stresses, shear stress), and the intensity and duration of the seismic ground shaking. The granular soils most susceptible are loose, saturated sands and non-plastic silty soils located below the water table.

The potential for liquefaction at the proposed project site is considered to be low. This is due to the absence of near surface groundwater and the generally dense subsurface materials. The California State Water Resources Control Board reported that the groundwater elevation for the nearest well (ID#24S26E12H001M) located approximately 1.25 miles east was 378 feet below grad surface on January 13, 2014 and well (ID# 24S26E13D001M) located approximately 1.3 miles south was 295.5 feet on March 8, 2016. The proposed project site would not include any habitable structures that would expose occupants to liquefaction potential. Therefore, the impacts related to seismic-related ground failure are considered to be less than significant.

The proposed project site lies in the relatively flat lying Alluvial plain, where landslides would not be expected to occur. Therefore, impacts related to landslides are not expected to occur or pose a hazard to the proposed project site.

Additionally, the proposed project site is classified as flat and relatively small and minimal grading would be required. Existing drainage patterns of the proposed project site would be maintained and would not result in erosion or loss of topsoil. Therefore, these impacts are considered less than significant.

3.5.7.2 Regulatory Setting

Federal

International Building Code

The International Building Code is published by the International Code Council as a model code to promote public safety and welfare by adoption of minimum development standards. These development standards, as implemented in state building codes and local ordinances, require

projects to comply with appropriate seismic design criteria, adequate drainage facility design, and completion of preconstruction soils and grading studies.

Uniform Building Code

The Uniform Building Code (UBC) is published by the International Conference of Building Officials (ICBO) and forms the basis for California's building code, as well as approximately half of the state building codes in the United States. The UBC has been adopted by the California Legislature to address the specific building conditions and structural requirements for California, as well as provide guidance on foundation and structural engineering for different soil types.

Clean Water Act (Erosion Control)

The Clean Water Act (CWA) (33 USC 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point-source and certain nonpoint-source discharges to surface water. Such discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). Projects that disturb one (1) acre or more are required to obtain NPDES coverage under the NPDES General Permit for Stormwater Discharges Associated with Construction Activity (General Permit), Order No. 2009-0009-DWQ. The General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which includes Best Management Plans (BMPs) to regulate stormwater runoff, including measures to prevent soil erosion.

State

California Building Code

The California Building Code (CBC), as contained in Title 24 CCR Part 2, has been adopted by the California Building Standards Commission and other agencies within the State of California, including Tulare County. This Code implements the requirements contained in the 2009 International Building Code and consists of 12 parts that contain administrative regulations of the California Building Standards Commission. Local agencies must ensure that development in their jurisdictions complies with guidelines contained in the CBC. Cities and counties can, however, amend the CBC to adopt more stringent building standards beyond those provided because of unique climatic, geological, or topographical conditions.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 provides a mechanism for reducing losses from surface fault rupture on a statewide basis. The intent of the Alquist-Priolo Act is to ensure public safety by prohibiting the siting of most structures for human occupancy across traces of active faults that constitute a potential hazard to structures from surface faulting or fault creep. The Alquist-Priolo Act requires the State Geologist to establish regulatory zones known as

Earthquake Fault Zones around the surface traces of active faults and to issue appropriate maps. Based on reviews of published maps, the project site is not contained within a delineated Earthquake Fault Zone.

Seismic Hazards Mapping Act of 1990

In accordance with Public Resources Code, Chapter 7.8, Division 2, CGS is required to delineate Seismic Hazard Zones. The Seismic Hazards Mapping Act of 1990 addresses earthquake hazards, including liquefaction and seismically induced landslides. The purpose of the Seismic Hazards Mapping Act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards, such as those associated with strong ground shaking, liquefaction, landslides, other ground failures, or other hazards caused by earthquakes. At the time of the preparation of this IS/MND, no Seismic Hazard Maps have been released for the project vicinity.

Local

Tulare County General Plan

Environmental Resource Management – 8.7 Soil Resources

ERM-7

To preserve and protect soil resources in the County for agricultural and timber productivity and protect public health and safety.

Health and Safety – 10.2 Geologic and Seismic Hazards

HS-2

To reduce the risk to life and property and governmental costs from seismic and geologic hazards.

HS-2.7 Subsidence

The County shall confirm that development is not located in any known areas of active subsidence. If urban development may be located in such an area, a special safety study will be prepared and needed safety measures implemented. The County shall also request that developments provide evidence that its long-term use of ground water resources, where applicable, will not result in notable subsidence attributed to the new extraction of groundwater resources for use by the development.

3.5.7.3 Impact Analysis

- a) *Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: landslides, strong seismic ground shaking or seismic-related ground failure, including liquefaction?*

The nearest inhabited structure (residence) to the proposed project site is a residence located approximately 1.0-mile northwest of the proposed project site. The proposed project would not expose people or structures to potential adverse effects from landslides as the project topography is flat and there are no inhabited structures at the proposed project site that would be impacted by strong seismic ground shaking, or seismic-related ground failure (including liquefaction and lateral spreading).

The proposed project site is in a seismically active region subject to future seismic shaking during earthquakes generated by active faults. The Poso Creek Fault is located 19 miles south and the San Andreas Fault Cholame-Carrizo section is located approximately 48.5 miles southwest of the proposed project site. However, the proposed project site is not located within any of the Alquist - Priolo Special Studies Zones of any of these faults.

Furthermore, the proposed drill rig has a low center of gravity with heavy base sub-structures that tapers up to smaller top member. This design, with low center of gravity, along with support cables used to additionally stabilize the tower, effectively allows the rig to withstand shaking and movement without falling over.

Project oil field equipment, including temporary drilling equipment and the production equipment are designed to meet American Petroleum Institute (API) Standards as well as the California Building Code (CBC) in particular, Title 24, Part 2, Chapter 17. Section 1708 details structural testing for seismic resistance and seismic design category as determined in CBC Section 1613. SBC Section 1708.4 outlines specific design compliance by referring to American Society of Civil Engineers (ASCE) ASCE 7 Chapter 13 (13.2.1 & 13.2.2) specifications and recommendations. Both API and ASCE have adopted the same recommendations regarding seismic design.

Tulare County Building Code of Regulations provides oil field permit exemptions under section 17.08.060 providing compliance with API standards.

Additionally, CalGEM regulations (CCR Section 1773.1) require secondary containment of all production facilities storing and/or processing fluids. The regulations require secondary containment capable of confining liquid for a minimum of 72 hours.

In the event an earthquake occurs during drilling activities, the drilling contractor will implement its Spill Prevention Control and Countermeasures Plan. A copy of the plan will be kept on site during drilling activities to address potential releases of petroleum, produced water and other fluids. In the event an earthquake occurs during any other proposed project phase, the drilling contractor will implement procedures outlined in its Spill Contingency Plan to address potential releases of petroleum, produced water and other fluids. Drilling

Contractor's existing Spill Contingency Plan was prepared in accordance with CCR § 1772.9 and is on file with the CalGEM. The Spill Contingency Plan will be amended to include the proposed project site and a copy of the plan shall be kept on site during construction and operation. The plan discusses methods to avoid and/or minimize impacts in the event of a release. The Spill Contingency Plan identifies the specific circumstances under which the emergency response agency would be contacted by authorized personnel. The purpose of the plan is to ensure that adequate containment will be provided to control accidental spills, that adequate spill response equipment and absorbents will be readily available, and that personnel will be properly trained in how to control and clean up any spills. Accordingly, the proposed project would not expose people or structures to potential adverse effects from landslides, strong seismic ground shaking, or seismic-related ground failure (including liquefaction).

b) Would the project result in substantial soil erosion or the loss of topsoil?

The proposed project would not result in substantial soil erosion or the loss of topsoil from construction related activities as described within this IS/MND. The proposed project site is flat, and the existing drainage patterns would be maintained. No impact is anticipated from soil erosion or loss of topsoil.

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Any potential for subsidence resulting from the proposed project would be either as a result of groundwater overdraft or oil fluid withdrawal.

Groundwater overdraft subsidence is caused by aquifer-system compaction due to the lowering of ground-water levels by sustained ground-water overdraft. However, water supplied would be from a local farmer. Specifically, as previously stated, the proposed project would use approximately 2,100 gallons of water per day for three (3) days during site preparation activities. Additionally, drilling the proposed well would require the use of approximately 84,000 gallons of water. The water used would be a local surface water source and not a local groundwater source. Accordingly, water use during the proposed project would have no impact on subsidence as a result of groundwater overdraft.

Subsidence related to fluid withdrawal in oil operations would not be an issue due to the character and depth of the formation. The proposed well would be drilled to a target formation depth not exceeding 5,000 feet with structural formations bridging and supporting the target formation from above the 5,000 feet to grade. Shale formations, while capable of fluid movement through existing fractures and/or peripheral related pathways, are still considered a structurally stable formation. These formations are not hydration dependent for structural stability. Accordingly, based on the depth of the well and the geological formation of the target location, the well would have no impact on subsidence due to oil fluid withdrawal.

Topography in the proposed project area is flat. Additionally, no evidence of historical landslides or mudslides was observed during the site visit on August 7 and September 20, 2019. No buildings are currently present or proposed on the proposed project site. During ongoing production activities, the proposed project site would be un-manned. Therefore, no impacts are expected.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1194), creating substantial risks to life or property?

The proposed project site is underlain by Soil Unit 130 – Nord fine sandy loam soils which are classified as B-Class. These soils are each described as a well-drained soil on alluvial fans, flood plains and low terraces. These soil types consist of non-expansive loams. Due to the loamy content of the soils along with proper moisture conditioning during compaction activities, these soils are not considered expansive. Therefore, there would be no impacts due to expansive soils.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

The proposed project does not involve the construction of any facilities requiring the use of septic tanks or any waste disposal systems. Production water is the only potential wastewater that would be generated during project activities. However, production water is not anticipated to be produced from the proposed well. No impact.

3.5.7.4 Mitigation Measures

No impact identified. No mitigation necessary.

3.5.7.5 References

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United States Department of Agriculture, Natural Resources Conservation Service. Soil Survey
of Tulare County, Northwestern Part, September 1988

Website:
<http://www.nrcs.usda.gov>

SECTION 3.5.8 – Greenhouse Gas Emissions

ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
GREENHOUSE GAS EMISSIONS <i>Would the project:</i>				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	_____	_____	X	_____
b. Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	_____	_____	X	_____

3.5.8.1 Environmental Setting

Global warming refers to an increase in the earth's average temperature as a result of increased concentration of greenhouse gases (GHG) in the atmosphere. GHGs include any gas that absorbs infrared radiation in the atmosphere. GHGs include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), halogenated fluorocarbons (HCFCs), ozone (O₃), perfluorinated carbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF₆).

Over the past decades, there is growing evidence of increased temperatures and increased concentrations of GHGs in the atmosphere. In response to the possibility that the increased temperatures are a result of human activity, the Environmental Protection Agency (EPA), California Air Resources Board (CARB) and local governments have enacted regulations aimed at curbing GHG emissions. Some of these regulations are listed below:

- Revisions to the Clean Air Act (CAA) affecting Title V and Prevention of Significant Deterioration (PSD) Sources (Tailoring Rule).
- Mandatory Reporting of GHG Emissions (U.S. EPA and CARB);
- CEQA Guidelines (California SB 97); and
- Statewide GHG Reductions (California AB 32).

The proposed project would be exempt from permit requirements under the Title V or PSD programs as the estimated annual emissions of criteria air pollutants would be less than 100 tons per year. The proposed project would also be exempt from mandatory state and federal reporting with annual emissions estimated to be less than 25,000 tons per year. The federal reporting thresholds are for the purpose of data collection to guide development of programs and policies. The state reporting program threshold is as specified in section 95812 of the Cap and Trade regulations.

The updated CEQA Guidelines assert that a project would not have a significant impact either at a project level or cumulatively if the project complies with a previously approved plan or mitigation.

On December 17, 2009, SJVAPCD adopted District's Policy for addressing GHG emissions and impacts. This policy was for both the District and other lead agencies when addressing GHG impacts. This policy does not recommend the use numerical thresholds. Instead, it advocates that projects comply with other emission reduction plans under AB-32. Projects complying with such plans are considered to have less than significant impact on global climate change. Under such a scenario, impacts will be considered less than significant individually and cumulatively.

District Policy established under AB-32 stresses compliance with Best Performance Standards (BPS). Projects implementing BPS would be determined to have less than significant impact on global warming individually and cumulatively. BPS is defined as the most effective achieved in practice means of reducing or limiting GHG emissions from a given source. SJVAPCD has established a set of BPS for a variety of stationary sources; however, compression ignition (diesel) engines are not included in the current list. For such sources, District Policy requires that GHG emissions be reduced by 29% which would be considered equivalent to BPS and therefore would have less than significant project and cumulative impact.

3.5.8.2 Regulatory Setting

In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United Nations Framework Convention on Climate Change established an agreement with the goal of controlling GHG emissions, including CH₄. As a result, the Climate Change Action Plan was developed to address the reduction of GHG in the United States. The plan consists of more than 50 voluntary programs. Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete ozone in the stratosphere (chlorofluorocarbons [CFCs], halons, carbon tetrachloride, and methyl chloroform) were phased out by 2000 (methyl chloroform was phased out by 2005).

On September 27, 2006, Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 was enacted by the State of California. The legislature stated, "global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." AB 32 caps California's GHG emissions at 1990 levels by 2020. AB 32 defines GHG emissions as all of the following gases: CO₂, CH₄, N₂O, HFCs, PFCs, and SF₆. This agreement represents the first enforceable statewide program in the U.S. to cap all GHG emissions from major industries and includes penalties for non-compliance. While acknowledging that national and international actions would be necessary to fully address the issue of global warming, AB 32 lays out a program to inventory and reduce GHG emissions in California and from power generation facilities located outside the state that serve California residents and businesses.

AB 32 charges the CARB with responsibility to monitor and regulate sources of GHG emissions in order to reduce those emissions. The CARB has adopted a list of discrete early action measures that can be implemented to reduce GHG emissions. The CARB has defined the 1990 baseline emissions for California, and has adopted that baseline as the 2020 statewide emissions cap. The CARB is conducting rulemaking for reducing GHG emissions to achieve the emissions cap by 2020. In designing emission reduction measures, the CARB must aim to minimize costs, maximize benefits, improve and modernize California's energy infrastructure, maintain electric system reliability, maximize additional environmental and economic co-benefits for California, and complement the state's efforts to improve air quality.

Global warming and climate change have received substantial public attention for more than 20 years. For example, the United States Global Change Research Program was established by the Global Change Research Act of 1990 to enhance the understanding of natural and human-induced changes in the Earth's global environmental system, to monitor, understand and predict global change, and to provide a sound scientific basis for national and international decision-making. Even so, the analytical tools have not been developed to determine the effect on worldwide global warming from a particular increase in GHG emissions, or the resulting effects on climate change in a particular locale. The scientific tools needed to evaluate the impacts that a specific project may have on the environment are even farther in the future.

Federal

U.S. Environmental Protection Agency

On April 2, 2007, in *Massachusetts v. U.S. EPA*, 549 U.S. 497 (2007), the Supreme Court found that GHGs are air pollutants that are covered by the CAA. The court held that U.S. EPA must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution that could reasonably be anticipated to endanger public health or welfare or whether the science is too uncertain to make a reasoned decision. In making these decisions, U.S. EPA is required to follow the language of Section 202(a) of the CAA. The Supreme Court decision resulted from a petition for rulemaking under Section 202(a) filed by more than one dozen environmental, renewable energy, and other organizations.

On April 17, 2009, the U.S. EPA Administrator signed Proposed Endangerment and Cause or Contribute Findings for GHGs under Section 202(a) of the CAA. EPA held a 60-day public comment period, which ended June 23, 2009, and received more than 380,000 public comments. These included written comments and testimony at two public hearings in Arlington, Virginia, and Seattle, Washington. U.S. EPA carefully reviewed, considered, and incorporated public comments and has now issued final findings.

The U.S. EPA found that six (6) GHGs taken in combination endanger both the public health and the public welfare of current and future generations. The U.S. EPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse effect and, under Section 202(a) of the CAA, result in air pollution that endangers public health and welfare. These findings were based on consideration of scientific evidence; a thorough review of public comments received; and has been in effect since 2010.

The U.S. EPA has adopted the following GHG regulations:

- 40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule. This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO₂e emissions per year. Additionally, the reporting of emissions is required for owners of SF₆- and PFC-insulated equipment when the total nameplate capacity of these insulating gases is above 17,280 pounds. The proposed project would not trigger the GHG reporting required by this regulation.
- 40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule. EPA recently mandated that Prevention of Significant Deterioration requirements be applied to facilities that have stationary-source CO₂e emissions exceeding 75,000 tons per year. The proposed project would not trigger the Prevention of Significant Deterioration permitting required by this regulation.

State

California Environmental Quality Act

A variety of statewide and local air pollution control district-level rules and regulations have been implemented or are in development in California that mandate a quantification of or reduction in GHGs. Under CEQA, analysis and mitigation of GHG emissions and climate change related to a proposed project is required when it has been determined that the project would result in a significant increase in GHGs.

San Joaquin Valley Unified Air Pollution Control District

Some air pollution control districts in California have adopted thresholds of significance for project analysis. The Air District, which has regulatory authority over air emissions from the proposed project, has not established a significance threshold for GHG emissions.

In December of 2009, the SJVAPCD adopted the policy “Addressing GHG Emission Impacts for Stationary Source Projects under CEQA When Serving as the Lead Agency”. The policy applies to all SJVAPCD permitting projects that have an increase in GHG emission. Additionally, the SJVAPCD adopted “Guidance for Valley Land-use Agencies in addressing GHG Emission Impacts for New Projects under CEQA” This guidance document was for lead agencies and interested parties in assessing and reducing project specific GHG emissions on global climate change. District policy and guidance do not recommend the use of numerical thresholds, but instead use a tiered approach.

A project is considered to have a less than significant cumulative impact, if that project either: 1) complies with an adopted statewide, regional, or local plan for reduction or mitigation of GHG emissions; or 2) complies with SJVAPCD approved BPS for the same project type; or 3) quantified project GHG emissions achieves AB 32 targeted GHG emission reduction of 29 percent compared to Business as Usual.

District Policy stresses compliance with performance-based standards, which the SJVAPCD refers to as Best Performance Standards (BPS). BPS is defined as the most effective achieved in practice means of reducing or limiting GHG emissions from a given source. Projects implementing BPS would be determined to have less than significant impact on global warming cumulatively. The SJVAPCD has established a set of BPS for a variety of sources; however, compression ignition (diesel) engines are not included in the current list.

Executive Order S-03-05

Executive Order (EO) S-3-05 was issued by California Governor Schwarzenegger in June 2006. Executive Order S-3-05 establishes statewide emissions reduction targets through 2050.

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

EO S-3-05 did not state specific requirements that pertain to the proposed project. However, actions taken by the state to implement the reduction targets could affect the proposed project, depending on the specific implementation measures that are developed.

Assembly Bill 32

AB 32, also known as the California Global Warming Solutions Act of 2006, was established to mandate the quantification of GHGs and reduce such emissions to 1990 levels by 2020. The law establishes periodic targets for reductions and requires certain facilities to report emissions of GHGs annually. The law also reserves the state's right to reduce emissions targets to levels lower than those proposed in certain sectors that contribute the most to emissions of GHGs, including transportation.

Additionally, the law requires that:

- GHG emission standards to be implemented by 2012; and
- CARB to develop an implementation program and adopt GHG control measures "to achieve the maximum technologically feasible and cost-effective GHG emission reductions from sources or categories of sources."

AB 32 directed the CARB to develop discrete early actions to reduce GHGs and also prepare a scoping plan to identify how best to reach the 2020 limit. The scoping plan contains the main strategies California would use to reduce GHGs that cause climate change. The scoping plan has a range of GHG reduction actions, including direct regulations; alternative compliance mechanisms; monetary and nonmonetary incentives; voluntary actions; market-based mechanisms, such as a cap-and-trade system; and an AB 32 cost-of-implementation fee regulation to fund the program.

The CARB's scoping plan update states, the following have occurred:

- Twelve of 30 CARB regulations were approved, including all nine discrete early actions.
- Approved measures that provide 70 million metric tons of CO₂e (MMTCO₂e) in 2020, 40 percent of the 2020 goal to reduce 169 MMTCO₂e; and
- First year of mandatory reporting completed (97 percent compliance rate).

The Scoping Plan was first approved by the Board in 2008 and must be updated every five years to ensure that California is on track to achieve the 2020 GHG reduction goal. CARB plans to focus on five key topics for the update. These include transportation, fuels, and infrastructure; energy generation, transmission, and efficiency; waste; water; and agriculture.

In 2011, the CARB approved the Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document (CEQA evaluation) to the Climate Change Action Plan. This document reported on progress made since the 2008 Scoping Plan. The CARB also updated the projected 2020 business as usual GHG emission inventory based on 2011 economic predictions, replacing the 2008 business as usual GHG emissions forecast. Based on the updated 2020 statewide inventory estimate, achieving AB 32's mandate would require a reduction of 80 million metric tons of CO₂e or approximately 16 percent from business as usual.

Senate Bill 1771

Senate Bill (SB) 1771, signed into law in 2001, required the Secretary of the Resources Agency to establish a nonprofit benefit corporation, to be known as the California Climate Action Registry (CCAR). The purpose of the CCAR is to assist California entities to establish GHG emissions baselines and administers a voluntary GHG emissions registry to measure and record voluntary GHG reductions that have been achieved since 1990 in the state. SB 1771 required the Energy Commission to qualify third-party organizations to provide assistance for purposes of monitoring and reducing GHG emissions. In addition, the Energy Commission was required to develop metrics for use by the CCAR and to update the State's inventory of GHG emissions by January 1, 2002. The law also required the adoption of standards to verify emissions reductions and required the establishment of GHG emissions reduction goals along with efficiency improvement plans.

Assembly Bill 1493

AB 1493, also known as the Pavley Regulations or the Clean Car Standards, was signed into law in 2002. It requires the State to develop and adopt regulations to achieve the maximum feasible and cost-effective reduction in GHG emissions emitted by passenger vehicles and light-duty trucks. Implementing regulations were adopted by CARB in September 2004.

The regulations were threatened by automaker lawsuits and stalled by the U.S. EPA's initial denial to allow California to implement GHG standards for passenger vehicles. The U.S. EPA later granted California the authority to implement GHG emissions reductions standards for new passenger cars, pickup trucks, and sport utility vehicles in 2009 and in the same year the CARB adopted amendments to the Pavley Regulations to reduce GHG emissions in new passenger vehicles between 2009 and 2016.

Executive Order S-01-07

Executive Order (EO) S-01-07, the Low Carbon Fuel Standard (LCFS), issued on January 18, 2007, calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. The EO instructed the California Environmental Protection Agency (CalEPA) to coordinate activities among the University of California, the California Energy Commission (CEC) and other state agencies to develop and propose a draft compliance schedule to meet the 2020 target. As a result, the CARB adopted the LCFS regulations which became effective in 2010 (CCR, Title 17, Sections 95480-95490). In 2011, the CARB approved amendments to the LCFS regulations. Those amendments went through the formal rulemaking process and became effective late 2012.

Senate Bill 97

Senate Bill 97 (SB 97), enacted in August 2007, requires the Office of Planning and Research (OPR) to develop guidelines for the mitigation of GHG emissions, or the effects related to releases of GHG emissions. On April 13, 2009, the OPR submitted proposed amendments to the Natural Resources Agency in accordance with SB 97 including analysis and mitigation of GHG emissions. Formal rulemaking was conducted in 2009 prior to adopting the amendments. As directed by SB 97, the Natural Resources Agency adopted amendments to the CEQA Guidelines for GHG emissions on December 30, 2009. On February 16, 2010, the Office of Administrative Law approved the amendments and filed them with the Secretary of State for inclusion in the California Code of Regulations. The amendments became effective on March 18, 2010. The amendments call for a lead agency to make careful judgment in the determination of significance of GHG emissions and lists factors to consider in assessing impacts from project related GHG emissions.

Local

Tulare County General Plan

The Air Quality Element of the 2030 Update of the Tulare County General Plan includes policies and implementation measures concerning air quality. The policies and implementation measures in the General Plan applicable to the proposed Project are Air Quality (AQ)-1.9 and AQ-1.10. Section 9.5 *Work Plan/Implementation Measures* beginning on Page 9-13 are included to implement the goals and policies of the Air Quality Element.

3.5.8.3 Impact Analysis

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Booher Consulting, LLC prepared emissions calculations to quantify GHGs (Appendix B) that would be emitted by the proposed project using equipment lists for each phase and corresponding assumptions provided by KEBO as presented in Section 2 Project Description. GHG emissions associated with site preparation were estimated using Road Construction Emissions Model, Version 8.1.0 software, which the SJVAPCD recommended for calculating air emissions for this type of project, since it involves release of fugitive dust emissions from site work (grading, trenching, etc.). For mobile equipment and vehicular emissions associated with site preparation, drilling, completion and testing, installation of production equipment, production and plugging and abandonment phases, GHG emissions would be generated entirely from mobile equipment and vehicular fuel combustion. Emissions of criteria pollutant (precursors of GHGs) from equipment and mobile sources were calculated using OFFROAD emission factors for various types and sizes (horsepower) of mobile equipment and for the duration of each phase. Calculations from the emission models determined that CO₂ would be released from the proposed project. In addition to CO₂, trace amounts of N₂O and CH₄ would also be released during the fuel combustion process, which would make up less than 1% of the total GHG generated by the proposed project.

Fugitive emissions from well components such as, tanks, valves, flanges, pumps, etc. are subject to SJVAPCD's Rule 4409. This Rule requires regular inspection and maintenance of well components. The emission rate of fugitive emissions is extremely low and is not a significant contributor to GHG impacts. Typically, the emission rates of VOCs are 0.00000005 kg/hour as noted in the EPA guidance leak detection and repair. Available at: <http://www.epa.gov/ttnchie1/efdocs/equiplks.pdf>

Project Level GHG Emissions

To assess the significance of the proposed project's GHG emissions, annual emissions were estimated for each project phase. Emission estimates are presented in Table 3.5.7.3-1. All construction related GHG emissions generated from the drilling, completion and testing, production equipment installation and plugging and abandonment phases of the proposed project are temporary and would occur for a maximum of 208 days. Please note that the 208 days was rounded up from 207.5 days to assess GHG emissions.

The proposed project would generate a total of tons of CO₂(e)/yr. and those emissions would be generated by a combination of mobile equipment and vehicle use for the construction of one (1) well site and the drilling of one (1) well. Short-term or construction related activities would generate tons of CO₂ (e)/yr. over a total duration of 208 days. Long-term or production related project activities would generate an estimated tons/year for the proposed well.

**Table 3.5.8.3-1
Summary of Greenhouse Gas Emissions**

Project Phase	CO ₂				CO ₂ (e)		
	1 Site + 1 Well				1 Site + 1 Well		
	Mobile	Equipment	Total		Mobile	Equipment	Total
	(tons/yr)	(ton/yr)	(ton/yr)		(tons/yr)	(ton/yr)	(ton/yr)
Site Preparation Phase	1.12	1.66	2.78		1.12	1.67	2.79
Drilling Phase	17.20	289.48	306.68		17.26	290.46	307.72
Completion/ Testing Phase	17.30	527.63	544.93		17.36	529.42	546.78
Production Equipment Installation Phase	2.09	1.04	3.13		2.10	1.04	3.14
Production Phase (Equipment includes 2 days for work-over rig)	8.28	15.86	24.14		8.31	15.91	24.22
Plugging & Abandonment Phase	0.13	4.49	4.62		0.13	4.51	4.64
TOTAL	46.12	840.16	886.28		46.28	843.01	889.29
Total Short Term (Construction) Emissions							865.07
Total Long-Term Emissions							24.22
Total for One (1) Well Site and One (1) Well							889.29
Notes:							
Ratio CO ₂ (e) /CO ₂ Diesel Combustion			1.0034 (See Appendix B – Table 4)				
Ratio CO ₂ (e) /CO ₂ Natural Gas Combustion			1.0005 (See Appendix B – Table 4)				

Project Level Impacts

The CalGEM has not adopted thresholds to determine significance of GHG emissions. Tulare County had developed a Climate Action Plan (CAP) in 2012 and then updated that Plan in 2018. The Tulare County CAP focuses on inventorying and monitoring GHG emissions within the 2020 to 2030 timeframe. If needed, corrective actions will be taken to ensure Plan targets will be met. As industrial process GHG emissions are not under the County’s regulatory authority, no thresholds of significance are included in the Plan. However, the 2018 CAP Update does include Table 18 CAP Consistency Checklist which includes compliance measures for non-residential land uses. This project is sited in an area deemed appropriate for this type of land use and is consistent with County plans.

The SJVAPCD has adopted thresholds to determine significance for GHG emissions based upon a tiered approach. As previously stated, CEQA Guidelines section 15064.4 states that the lead agency should make a good-faith effort to estimate the amount of GHGs a project would generate and shall have discretion to determine, in the context of a particular project, whether to use a quantification method or rely on a qualitative analysis or performance based standards.

Tulare County RMA staff reviewed the 2009 District Policy and guidance, which provide the SJVAPCD and other lead agencies a process to assess GHG emission impacts from stationary sources. The District Policy focuses on long-term (post construction) emissions and is one that CalGEM is applying to assess long-term project impacts on GHG emissions from stationary sources. The SJVAPCD is responsible for air quality and pollution control in the SJVAB and is charged with the development and implementation of air pollution control measures in the San Joaquin Valley Air Basin. The SJVAPCD adopted a policy and developed guidance to assist lead agencies and interested parties in assessing and reducing impacts of project specific GHG emissions.

District Policy emphasizes Best Performance Standards (BPS) as a streamlined method of addressing impacts. Projects implementing BPS would be determined to have less than significant individual and cumulative impact on global warming. The SJVAPCD has established a set of BPS for a variety of sources; however, compression ignition engines (such as diesel engines used for project construction or other mobile sources) are not included in the current BPS list. District Policy requires projects not able to implement BPSs to reduce stationary GHG emissions by 29% as compared to business as usual.

Proposed project construction equipment and vehicles are all considered as mobile equipment for the quantification of GHG emissions. While there are no adopted numeric significance thresholds or BPS for mobile sources at this time, the project is consistent with existing strategies under the state's adopted GHG reduction plan. There are no adopted local or regional GHG reduction plans for the proposed project area. The CARB, as the lead state agency for air quality, establishes emission standards for on-road motor vehicles and some off-road sources; it also establishes fuel specifications. The CARB has established cleaner vehicle technologies, lower-carbon fuels, heavy-duty vehicle GHG regulation, and hybrid requirements for medium and heavy-duty vehicles as strategies to reduce GHG emissions statewide. These strategies are part of CARB's approved AB-32 Scoping Plan to achieve the goal of reducing GHG emissions to 1990 levels by 2020. The CARB indicates that the state is on target to meet the 2020 reductions attributable to transportation related emissions (CARB 2019). Therefore, Tulare County finds that the proposed project related construction activities would have a less than significant impact on GHG emissions.

b) Would the project conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed project would not conflict with any adopted plan, policy, or regulation with the purposed of reducing GHG emissions. No impact.

3.5.8.4 Mitigation Measures

No impact identified. No mitigation necessary.

3.5.8.5 References

California Air Resources Board. 2011. 2011 AB 32 Scoping Plan and Functional Equivalent Document. Status of Scoping Plan Recommended Measures. Accessed in 2019. Website: <http://www.arb.ca.gov/cc/scopingplan/timeline.htm>

California Code of Regulations, Sections 2421 to 2427 of Title 13, Division 3, Chapter 9, Article 4.

CARB GHG Scoping Plan (November 22, 2013); Website: <http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm>

Rule 2280 Portable Equipment Registration. Accessed in 2019. Website:
<http://www.valleyair.org/rules/1ruleslist.htm>

San Joaquin Valley Unified Air Pollution Control District. 2009. Final Draft *Addressing Greenhouse Gas Emission Impacts Under the California Environmental Quality Act*. (December 2009) Accessed in 2019.

Website: <http://www.valleyair.org/programs/CCAP/12-17-09/1%20CCAP%20-%20FINAL%20CEQA%20GHG%20Staff%20Report%20-%20Dec%2017%202009.pdf>

United States Environmental Protection Agency. Standards for Non-Road Diesel Engines. Federal 40 CFR 1068, 40 CFR 89, 40 CFR 1039.

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online: <http://generalplan.co.tulare.ca.us/>

SECTION 3.5.9 – Hazards and Hazardous Materials

ISSUES	Potentially Significant Impact		Less Than Significant with Mitigation Incorporated		Less Than Significant Impact		No Impact
HAZARDS & HAZARDOUS MATERIALS <i>Would the project:</i>							
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	_____		X		_____		_____
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	_____		X		_____		_____
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	_____		_____		_____		X
d. Be located on a site which is included on a list of hazardous materials compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?	_____		_____		_____		X
e. For a project located within 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 result in a safety hazard for people residing or working in the project area?	_____		_____		_____		X
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	_____		_____		_____		X

g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	_____		_____		_____		X
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	_____		_____		_____		X

3.5.9.1 Environmental Setting

The proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. Project related activities, with the exception of production, would require minimal transportation, use or storage of hazardous materials including fuels, oils, lubricants, hydraulic fluids and solvents used at the proposed project site.

KEBO proposes to use a closed loop system; accordingly, no sump would be constructed as part of this project. Above ground portable tanks would be used for mixing and storing drilling fluids. All fluids would be disposed of in accordance with the requirements of the Central Valley Regional Water Quality Control Board (RWQCB). The solids that accumulate in the above ground tanks would be transported offsite for disposal. If any wastes test positive for hazardous material, KEBO will be disposed of at the Waste Management Kettleman Hills Facility, a licensed Class 1, 2 and 3 treatment, storage and disposal facility. This facility is permitted to receive up to 2,000 tons/day (*Active Landfills Profile*, www.calrecycle.ca.gov) and is located approximately 60 miles due west of this location.

As previously stated, hazardous materials would be used and stored on site according to applicable federal, state and local regulations. However, the proposed project would not result in the production of hazardous waste as defined and regulated by Titles 22 and 23 of the California Code of Regulations. Rather, the project would generate non-hazardous designated waste, including drilling muds and oily wastes, able to be disposed of in a permitted Class II disposal facility. In the unlikely event an anticipated waste were to later be deemed a hazardous Class I waste by the state, such waste would be treated, stored and disposed of at an offsite facility permitted to accept Class I waste. Hazardous materials and non-hazardous waste would be transported by a licensed transportation company. The commercial transportation, identification, and designation of appropriate shipping routes for these materials would be in conformance with the adopted Tulare County and Incorporated Cities Hazardous Waste Management Plan (HWMP). California regulates the transportation of hazardous waste originating or passing through the State, by statute, in the California Health and Safety Code and Title 22 and 13 of the California Code of Regulations (CCR). The California Highway Patrol (CHP) and Caltrans have primary responsibility for enforcing these regulations and responding to hazardous materials transportation emergencies. The CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provide detailed

information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP. The CHP conducts regular inspections of licensed transporters to ensure regulatory compliance. Transportation of hazardous waste is also regulated under the Hazardous Materials Regulations Section 49 of the Code of Federal Regulations (CFR). The Environmental Protection Agency (EPA) has exempted the transportation of produced water, drilling fluids, drill cuttings and rig wash as the EPA believes these “special wastes” are lower in toxicity than other wastes being regulated as hazardous waste under Resource Conservation and Recovery Act (*Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations*, EPA, October 2002).

If the well is determined to have economic production potential, production equipment including a well head and pump jack with a 15 hp motor would be installed at the proposed project site. KEBO anticipates 80 barrels of oil and 0 barrels of produced water would be produced daily from the well. The oil would be transported from the proposed project site by truck to ALON USA Refinery located approximately 40 miles to the south of the proposed project site. KEBO estimates that 5 truck trips per week would be required to transport the oil to ALON USA Refinery. The proposed project site would be visited daily by KEBO staff, which would result in a daily pick-up truck round-trip for the life of the well. KEBO anticipates the use of a work-over rig for maintenance purposes would be required for a maximum of two (2) days every three (3) years for the life of the well. KEBO would prepare and implement a Spill Contingency Plan and Emergency Response Plan to be in compliance with applicable federal EPA and California regulations to address potential spills, discharges, and releases from drilling and production operations.

The nearest public airport is the Delano Kern County Airport approximately 9.14 miles southwest of the proposed project site. The nearest private air strip over 10 miles of the proposed project site. The nearest inhabited structure (residence) to the proposed project site is located approximately 1.0-mile northwest of the proposed project site.

3.5.9.2 Regulatory Setting

All hazardous materials would be transported and stored according to the following applicable federal, state, and local regulations:

Federal

Federal Toxic Substances Control Act/Resource Conservation and Recovery Act/Hazardous and Solid Waste Act

The Federal Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act of 1976 (RCRA) established an Environmental Protection Agency (EPA) administered program to regulate the generation, transport, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the “Cradle to grave” system of regulating hazardous wastes. The primary goals of the Act are to promote environmentally sound disposal methods, maximize their use of

recoverable resources, and foster resource conservation.

Resource Conservation and Recovery Act, Subtitle “D” (40 CFR Part 258) regulates the management of non-hazardous solid waste. It establishes minimum federal technical standard the guidelines for state solid waste plans in order to promote environmentally sound management of solid waste (U.S.EPA 2012). Subtitle “D” of the RCRA regulates the following nonhazardous solid wastes:

- Garbage also known as municipal solid waste.
- Refuse.
- Sludges from waste treatment plants, water supply treatment plans, or pollution control facilities.
- Non-hazardous industrial wastes; and
- Other discarded material, including solid, semi-solid, liquid, or contained gaseous materials resulting from industrial and commercial activities.

Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as “Superfund,” was enacted by Congress in 1980. This law (42 United State Code [U.S.C.] 103) provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA establishes requirements concerning closed and abandoned hazardous waste sites, provides for liability of persons responsible for releases of hazardous waste at these sites, and establishes a trust fund to provide for cleanup when no responsible party can be identified. CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP (Title 40, Code of Federal Regulations [CFR], Part 300) provides the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The NCP also established the National Priorities List (NPL). CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986.

Clean Water Act/Spill Prevention, Control, and Countermeasure Rule

The Clean Water Act (CWA) (33 U.S.C. 1251 et seq., formerly the Federal Water Pollution Control Act of 1972) was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of Waters of the United States. As part of the CWA, EPA oversees and enforces the Oil Pollution Prevention regulation contained in 40 CFR 112, which is often referred to as the “SPCC rule” because it requires facilities to prepare, amend, and implement spill prevention, control, and countermeasure (SPCC) plans. A facility is subject to SPCC regulations if a single oil storage tank has a capacity greater than 660 gallons; the total aboveground oil storage capacity exceeds 1,320 gallons; or the underground oil storage capacity exceeds 42,000 gallons and, due to its location, the facility could reasonably be expected to discharge oil into or upon the “Navigable Waters” of the United States.

Other Federal regulations overseen by the EPA relevant to hazardous materials and environmental contamination include 40 CFR 1(D) (Water Programs) and 40 CFR 1(I) (Solid Wastes). Furthermore, 40 CFR 1(D)(116) sets forth a determination of the reportable quantity for each substance that has been designated as hazardous, and 40 CFR 1(D)(117) applies to quantities of designated substances equal to or greater than the reportable quantities that may be discharged into Waters of the United States.

National Oil and Hazardous Substances Pollution Contingency Plan

The National Oil and Hazardous Substances Pollution Contingency Plan, more commonly called the National Contingency Plan or NCP, is the federal government's blueprint for responding to both oil spills and hazardous substance releases. The National Contingency Plan is the result of efforts to develop a national response capability and promote overall coordination among the hierarchy of responders and contingency plans.

The first National Contingency Plan was developed and published in 1968 in response to a massive oil spill from the oil tanker Torrey Canyon off the coast of England the year before. To avoid the problems faced by response officials involved in this incident, U.S. officials developed a coordinated approach to cope with potential spills in U.S. waters. The 1968 plan provided the first comprehensive system of accident reporting, spill containment, and cleanup, and established a response headquarters, a national reaction team, and regional reaction teams (precursors to the current National Response Team and Regional Response Teams).

Congress has broadened the scope of the NCP over the years. As required by the CWA of 1972, the NCP was revised the following year to include a framework for responding to hazardous substance spills as well as oil discharges. Following the passage of Superfund legislation in 1980, the NCP was broadened to cover releases at hazardous waste sites requiring emergency removal actions. Over the years, additional revisions have been made to the NCP to keep pace with the enactment of legislation. The latest revisions to the NCP were finalized in 1994 to reflect the oil spill provisions of the Oil Pollution Act of 1990.

Spill Prevention, Control, and Countermeasures Plan

Federal regulations require owners or operators of non-transportation-related bulk petroleum storage facilities having an aggregate aboveground storage capacity greater than 1,320 gallons or a buried storage capacity greater than 42,000 gallons to prepare and maintain a site-specific SPCC Plan for their facility. An SPCC Plan is a detailed, facility-specific, written description of how a facility's operations comply with the requirements of the Oil Pollution Prevention Regulation 40 CFR Part 112. These requirements include measures such as secondary containment, facility drainage, containment dikes and barriers, sump and collection systems, retention ponds, curbing, tank corrosion protection systems, and liquid level devices.

Current regulations state that, if a bulk petroleum storage facility was operating prior to August 16, 2002, then the owner or operator must maintain their SPCC Plan and amend the SPCC Plan, as necessary, on or before February 17, 2006. And the owner or operator must have implemented the amended SPCC Plan no later than August 18, 2006. If a facility becomes operational after

August 16, 2002, through August 18, 2006, then the owner or operator must have prepared and implemented an SPCC Plan on or before August 18, 2006. If a facility becomes operational after August 18, 2006, then the owner or operator must prepare and implement an SPCC Plan before beginning operations. A copy of the SPCC Plan must be kept at the facility if the facility is attended four or more hours per day.

Occupational Safety and Health Standards

The Occupational Safety and Health Act establishes safe exposure limits for chemicals to which construction workers may be exposed. Safety and Health Regulations for Construction (Title 29 CFR Part 1926) contains compliance guidelines for construction activities, which include occupational health and environmental controls to protect worker health and safety. These guidelines articulate the required health and safety plans to be developed and implemented during construction, including associated training, protective equipment, evacuation plans, chains of command, and emergency response procedures. Methane is regulated by the Occupational Safety and Health Act under (Title 29 CFR Part 1910), which sets standards for worker exposure to a “hazardous atmosphere” within confined spaces where the presence of flammable gas vapor or mist is in excess of 10 percent of the lower explosive limit. Lead exposure during construction activities is regulated by the Occupational Safety and Health Act Lead Standard (Title 29 CFR Part 1926.62, Lead Exposure in Construction – Interim Final Rule – Inspection and Compliance Procedures). The Lead Standard focuses on minimizing the potential for workers to be exposed to lead-contaminated soils or building materials during demolition and construction activities.

U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration

The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) administers regulations governing the transportation and safety of defined hazardous materials including the transport of hazardous materials by carriers (trucks) on public highways through Title 49, CFR Part 171 through 180.

State

California Department of Conservation, California Geologic Energy Management Division

The Geologic Energy Management Division (CalGEM) is mandated by Section 3106 of the Public Resources Code (PRC) to supervise the drilling, operation, maintenance, and plugging and abandonment of wells for the purpose of preventing: (1) damage to life, health, property, and natural resources; (2) damage to underground and surface waters suitable for irrigation or domestic use; (3) loss of oil, gas, or reservoir energy; and (4) damage to oil and gas deposits by infiltrating water and other causes. CalGEM’s regulatory program promotes the sensitive development of oil, natural gas, and geothermal resources in California through sound engineering practices, pollution prevention, and the implementation of public safety programs. CalGEM requires any construction above or near plugged or abandoned oil and gas wells to be avoided and remediation of improperly abandoned wells to current CalGEM standards.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne), passed in 1969, acts in concert with the Federal CWA. The Porter-Cologne established the State Water Resources Control Board (SWRCB) and divided the State into nine regions, each overseen by a RWQCB. The SWRCB is the primary State agency responsible for protecting the quality of the State's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine RWQCBs. The proposed project is located within the Tulare Lake Basin and is in the jurisdiction of the Central Valley RWQCB (Region 5).

Porter-Cologne provides for the development and periodic review of Water Quality Control Plans that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. These plans are primarily implemented by using the NPDES permitting system to regulate waste discharges to waters of the U.S. so that water quality objectives are met. One of the key differences between the Porter-Cologne and CWA is that Porter-Cologne also applies to discharges to land. Each RWQCB is responsible for updating their plans every three (3) years, which provides the technical basis for determining Waste Discharge Requirements (WDRs), taking enforcement actions, and evaluating clean water grant proposals. Porter-Cologne also assigns responsibility for implementing CWA Sections 401, 402, and 303(d) to the SWRCB and RWQCBs.

The Water Quality Control Plan for the Tulare Lake Basin (Basin Plan), revised January 2004 (with approved amendments), designates the following beneficial uses of surface water for westside streams within the basin: agricultural supply, industrial service and process supply, contact and noncontact water recreation, warm fresh water habitat, preservation of rare, threatened and endangered species, and groundwater recharge. The Basin Plan also classifies the groundwater and spring water within one-half mile of the project site as having no beneficial uses (RWQCB 2004).

Department of Toxic Substances Control (DTSC)

The DTSC regulates hazardous waste in California primarily under the authority of the federal RCRA, and the California Health and Safety Code. Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning. From these laws, DTSC's major program areas develop regulations and consistent program policies and procedures.

The regulations spell out requirements for those who handle hazardous waste to comply with state laws. Under RCRA, DTSC has the authority to implement permitting, inspection, compliance, and corrective action programs to ensure those who manage hazardous waste follow State and federal requirements.

California law provides the general framework for regulation of hazardous wastes by the Hazardous Waste Control Law (HWCL) passed in 1972 (California Health and Safety Code Sections 25100-25249). DTSC is the state's lead agency in implementing the HWCL. The HWCL provides for state regulation of existing hazardous waste facilities, which

include “any structure, other appurtenances, and improvements on the land, used for treatment, transfer, storage, resource recovery, disposal, or recycling of hazardous wastes,” and requires permits for, and inspections of, facilities involved in generation and/or treatment, storage and disposal of hazardous wastes.

The DTSC compiles and updates annually the Hazardous Waste and Substance Sites (Cortese) List, which is based on provisions in Government Code Section 65962.5 was originally enacted in 1985. The intent of the original statute was to create a list of hazardous waste facilities, lands designated as hazardous waste property, information on hazardous waste disposal on public land, all sites listed pursuant to section 25356 of the Health and Safety Code, and all sites in the Abandoned Site Assessment Program. While the DTSC maintains the Cortese List, other state agencies contribute data to the list including the Department of Health Services, the State Water Resources Control Board, and the California Integrated Waste Management Board with Cal EPA providing oversight of the data and process. The Cortese List is a planning document used by agencies and developers to comply with CEQA as a source of information on the location of hazardous materials release sites.

Worker and Workplace Hazardous Materials Safety

Occupational safety standards exist in federal and state laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health Administration (CalOSHA) is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. Authority to implement workplace safety regulations is under jurisdiction of CalOSHA in Title 8 of the CCRs. Among other requirements, CalOSHA obligates many businesses to prepare Injury and Illness Prevention Plans and Chemical Hygiene Plans. The Hazard Communication Standard requires that workers be informed of the hazards associated with the materials they handle. For example, manufacturers are to appropriately label containers, Material Safety Data Sheets are to be available in the workplace, and employers are to properly train workers.

Hazardous Materials Transportation

The CHP and Caltrans are the enforcement agencies for hazardous materials transportation regulations on state roads, and local agencies (Fire and Police departments) are the enforcement authority on local streets. Transporters of hazardous materials and waste are responsible for complying with all applicable packaging, labeling, and shipping regulations. The Office of Emergency Services also provides emergency response services involving hazardous materials incidents.

California Department of Forestry and Fire Protection

CAL FIRE is dedicated to the fire protection and stewardship of over 31 million acres of California’s privately-owned wildlands. In addition, the California Department of Forestry and Fire Protection provides varied emergency services in 36 of the state’s 58 counties via contracts with local governments. The purpose of the Fire Hazard Severity Zone Map is to assess fire

hazard severity across the State and to identify applicable jurisdiction responsibilities for fire protection between the State of California and county and local cities including unincorporated areas. The proposed project site is not identified as being in an urban wild land fire interface on the map adopted by the Tulare County Fire Department but is identified as having a “moderate” fire risk. All agencies and departments of Tulare County are expected to respond promptly and effectively to any foreseeable emergency.

Local

Tulare County General Plan

HS-1.2 Development Constraints

The County shall permit development only in areas where the potential danger to the health and safety of people and property can be mitigated to an acceptable level.

Health and Safety – 10.4 Hazardous Materials

HS-4

To protect residents, visitors, and property from hazardous materials through their safe use, storage, transport, and disposal.

HS-4.1 Hazardous Materials

The County shall strive to ensure hazardous materials are used, stored, transported, and disposed of in a safe manner, in compliance with local, State, and Federal safety standards, including the Hazardous Waste Management Plan, Emergency Operations Plan, and Area Plan.

HS-4.2 Establishment of Procedures to Transport Hazardous Wastes

The County shall continue to cooperate with the California Highway Patrol (CHP) to establish procedures for the movement of hazardous wastes and explosives within the County.

HS-4.3 Incompatible Land Uses

The County shall prevent incompatible land uses near properties that produce or store hazardous waste.

HS-4.4 Contamination Prevention

The County shall review new development proposals to protect soils, air quality, surface water, and groundwater from hazardous materials contamination.

HS-4.7 Coordination of Materials on Public Lands

The County shall work jointly with State and Federal land managers to coordinate the handling and disposal of hazardous materials on public lands.

HS-4.8 Hazardous Materials Studies

The County shall ensure that the proponents of new development projects address

hazardous materials concerns through the preparation of Phase I or Phase II hazardous materials studies for each identified site as part of the design phase for each project. Recommendations required to satisfy federal or State cleanup standards outlined in the studies will be implemented as part of the construction phase for each project.

3.5.9.3 Impact Analysis

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

There is potential for accidental releases of hazardous materials during project operations, including a potential for an accidental release during drilling operations if there were a blowout; however, as required by CalGEM regulations (CCR Section 1722.2-1724.10) surface casing would be set, cemented, and blowout prevention equipment would be installed at the wellhead and tested to minimize the potential releases associated with blowouts. Potential impacts associated with the accidental release of these materials depend on the quantity and type, the location where it is used, the toxicity or other hazardous characteristics of the material, and whether it is transported, stored, and used in a solid, liquid, or gaseous form. KEBO has an existing Spill Contingency Plan in accordance with CCR § 1772.9 on file with CalGEM. The Spill Contingency Plan would be amended to include the proposed project site and a copy of the plan shall be kept on site during construction and operation. The Spill Contingency Plan discusses methods to avoid and/or minimize impacts in the event of a release. The Spill Contingency Plan identifies the specific circumstances under which the emergency response agency would be contacted by authorized personnel. The purpose of the Spill Contingency Plan is to ensure that adequate containment would be provided to control accidental spills, that adequate spill response equipment and absorbents would be readily available, and that personnel would be properly trained in how to control and clean up any spills.

With implementation of the standard preventive and mitigation measures Hazards 1 through 5 below, the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Please see discussion in Section 3.5.9.3(a).

With the implementation of Mitigation Measures, Hazards 1 through 5 presented below, the proposed project will not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of any potential future hazardous materials into the environment.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No existing or proposed schools are located within one-quarter mile of the proposed project site. The nearest school is the Richgrove School District located approximately 4.1 miles south of the proposed project site. Therefore, the proposed project would not have the potential to emit hazardous emissions or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. No impact.

- d) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?***

The proposed project site was not identified as a hazardous material/hazardous waste facility site on any of the California hazardous materials regulatory agency database websites. A search of the proposed project site in the California Environmental Protection Agency (Cal/EPA) Cortese List compiled pursuant to Government Code Section 65962.5 for the California Department of Toxic Substances hazardous waste sites, the Envirostor database of sites where hazardous substances have been released; and Geotracker, the California database of leaking underground storage tanks, were negative. No impact.

- e) For a project located within 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 result in a safety hazard for people residing or working in the project area?***

The nearest public airport is the Delano Public Airport (East of Hwy 99 and southside of Delano, CA) located 9.14 miles southwest of the proposed project site. The proposed project site would not result in a safety hazards for people residing or working in the project area related to public airport activities. No impact.

- f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?***

No private airstrips are within the vicinity of the proposed project. No impact.

- g) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?***

The proposed project does not propose any road work or closures that would impair access. The proposed project site can be accessed from Highway 99, Elmo Highway, Highway 155 and various county and farm access roads (See Figures 2 and 3). The proposed project does not include any road construction work or any other work or facilities that may physically interfere with implementation of an emergency response plan. No impact.

- h) Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?***

The proposed project site is not located in a wildland area. No permanent buildings or structures are proposed as part of the proposed project. It is designated Non-wildland/Non-

urban in the Tulare County Local Responsibility Area. It is designated as “Moderate” in the Fire Hazard Severity Zone map prepared by the California Department of Forestry and Fire Protection (CalFire). The proposed project would not increase fire risk in wildland areas. No impact.

3.5.9.4 Mitigation Measures

The following mitigation measures would be implemented to avoid and/or minimize potential impacts resulting from hazards or hazardous materials:

Hazards 1 - All hazardous materials such as diesel fuel shall be stored according to the California Code of Regulations (CCR) Title 22, 23, 26 & 27 and California Fire Codes (CFR) Title 24 and Tulare County General Plan. Material Safety Data Sheets shall be on site. Hazardous waste materials shall be managed properly in accordance with requirements that comply with, or are authorized by, the Code of Federal Regulations (40 CFR) and refined in California through CCR, Title 14, 22, 23, 26 & 27. Training shall be provided to all personnel involved in handling of hazardous materials/waste.

Hazards 2 - In order to minimize potential impacts associated with a blowout, KEBO shall comply with CCR Title 14, Division 2, Chapter 4, Articles 3 and 4, specifically Article 4, Sections 1941-1942. Requirements for well casing design and blowout prevention equipment are regulated by the Division. CalGEM engineers shall be notified for required tests and other operations.

Hazards 3 - All above ground storage tanks would be located within a bermed area, which provides a storage volume of at least 110% of the storage volume of the largest tank. Daily inspections of the above ground storage tanks would be conducted, and an inspection log would be maintained for review by regulatory agency personnel. The inspection log would also document corrective actions taken, if necessary.

Hazards 4 - Fluid disposal shall follow RWQCB regulations (CCR Title 23 Waters).

Hazards 5 - If project development uncovers any previously unknown oil, gas, or injection wells, CalGEM shall be notified. If unrecorded wells are uncovered during excavation or grading, remedial plugging operations may be required.

3.5.9.5 References

Central Valley Regional Water Quality Control Board. *Laws and Regulations*.
Website: http://www.waterboards.ca.gov/centralvalley/laws_regulations/

California State Water Resources Control Board. *Geotracker database*. Accessed in 2019.
Website: <http://geotracker.waterboards.ca.gov>

California Department of Forestry and Fire Protection, *Tulare County Fire Hazard Severity Zone*

Maps. Accessed in 2019.

Website: http://www.fire.ca.gov/fire_prevention/fhsz_maps/fhsz_maps_tulare.php and

California Department of Conservation, Geologic Energy Management Division (formerly Division of Oil, Gas, and Geothermal Resources), *Publications: Laws and Regulations*

Website: https://www.conservation.ca.gov/calgem/pubs_stats

California Code Regulations Title 14 CCR

Website: ftp://ftp.consrv.ca.gov/pub/oil/publications/PRC04_January_11.pdf

SECTION 3.5.10 – Hydrology and Water Quality

ISSUES	Potentially Significant Impact		Less Than Significant with Mitigation Incorporated		Less Than Significant Impact		No Impact
HYDROLOGY AND WATER QUALITY <i>Would the project:</i>							
a. Violate any water quality standards or waste discharge standards?	_____		_____		_____		X
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	_____		_____		_____		X
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on-or off-site?	_____		_____		_____		X
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or off-site?	_____		_____		_____		X
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	_____		_____		_____		X
f. Otherwise substantially degrade water quality?	_____		_____		_____		X
g. Place housing within a 100-year flood hazard area?	_____		_____		_____		X
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	_____		_____		_____		X

i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	_____		_____		_____		X
j. Inundation by mudflow?	_____		_____		_____		X

3.5.10.1 Environmental Setting

The proposed project site is located within the Tulare Basin Plain Watershed. The watershed supports a variety of water uses including municipal and agricultural supply systems. Surface water in many areas is intimately connected with the ground water, thereby having a profound effect on local groundwater supplies. As previously discussed, no enhanced oil recovery techniques including hydraulic fracturing is proposed as part of this project. The proposed project would not alter current drainage patterns in the project area.

As described in Table 3.5.9.1-1, the proposed project would use approximately 2,100 gallons of water per day for three (3) days during site preparation activities. Drilling the proposed well would require the use of approximately 84,000 gallons of water. As previously stated, the water used would be a local surface water source and not a local groundwater source. No new entitlements would be required.

**Table 3.5.10.1-1
Water Requirements for Different Phases**

Project Phase	Source of Water	Amount of Water per Day (gallons)	Number of Days
Site Preparation	Surface Water from Local Farmer	2,100	3 days
Drilling Phase	Surface Water from Local Farmer	84,000	10.5 days

3.5.10.2 Regulatory Setting

Federal

Clean Water Act

The Clean Water Act (CWA) (CWA, 33 USC 1251-1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The objective of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” Important applicable sections of the act are as follows:

- Section 301 prohibits the discharge of any pollutant by any person, except as in compliance with Sections 302, 306, 307, 318, 402, and 404 of the CWA.
- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.

- Section 401 requires an applicant for any federal permit that proposes an activity which may result in a discharge to “waters of the United States” to obtain certification from the state that the discharge would comply with other provisions of the Act. Certification is provided by the RWQCBs.
- Section 402 establishes the National Pollution Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. In California, this permit program is administered by the SWRCB and RWQCBs, and discussed in detail below.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers (USACE).
- Section 402, NPDES: The CWA is based on the concept that all discharges into the Nation’s waters are unlawful unless specifically authorized by permit. The 1972 amendments to the Federal Water Pollution Control Act established the NPDES permit program to control discharges of pollutants from point sources (Section 402). The 1987 amendments to the CWA created a new section of the act devoted to stormwater permitting (Section 402[p]). The EPA has granted the State primacy in administering and enforcing the provisions of the CWA and the NPDES permit program. The NPDES permit program is the primary Federal program that regulates point-source and nonpoint-source discharges to waters of the United States.

Section 303(d), Total Maximum Daily Loads

Section 303(d) of the CWA (33 USC 1250 et seq., at 1313(d)) requires states to identify impaired water bodies as those that do not meet water quality standards. States are required to compile this information in a list and submit the list to EPA for review and approval. As part of this process, states are required to prioritize waters and watersheds for future development of total maximum daily load (TMDL) requirements. SWRCB and RWQCBs have ongoing efforts to monitor and assess water quality, to prepare the Section 303(d) list, and to develop TDML requirements. No 303(d) listed water bodies occur within the project vicinity.

National Flood Insurance Act

The Federal Emergency Management Agency (FEMA) is responsible for managing the National Flood Insurance Program (NFIP), which makes federally backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. The NFIP, established under the National Flood Insurance Act, requires that participating communities adopt certain minimum floodplain management standards. To help identify areas with flood potential, FEMA has developed Flood Insurance Rate Maps (FIRMs) that can be used for planning purposes, including floodplain management, flood insurance, and enforcing mandatory flood insurance purchase requirements. Tulare County is a participating jurisdiction in the NFIP, and, therefore, all new development must comply with the minimum

requirements of the NFIP.

State

Department of Water Resources

The Department of Water Resources (DWR) is responsible for preparing and updating the California Water Plan to guide development and management of the State's water resources; planning, designing, constructing, operating, and maintaining the State Water Resources Development System; regulating dams; providing flood protection; assisting in emergency management to safeguard life and property; educating the public; and serving local water needs by providing technical assistance. In addition, DWR cooperates with local agencies on water resources investigations; supports watershed and river restoration programs; encourages water conservation; explores conjunctive use of ground and surface water; facilitates voluntary water transfers; and, when needed, operates a State drought water bank.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne), passed in 1969, acts in concert with the Federal CWA. The Porter-Cologne established the State Water Resources Control Board (SWRCB) and divided the State into nine regions, each overseen by a RWQCB. The SWRCB is the primary State agency responsible for protecting the quality of the State's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine RWQCBs. The proposed project is located within the Tulare Lake Basin and is in the jurisdiction of the Central Valley RWQCB (Region 5).

Porter-Cologne provides for the development and periodic review of Water Quality Control Plans that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. These plans are primarily implemented by using the NPDES permitting system to regulate waste discharges to waters of the U.S. so that water quality objectives are met. One of the key differences between the Porter-Cologne and CWA is that Porter-Cologne also applies to discharges to land. Each RWQCB is responsible for updating their plans every three (3) years which provides the technical basis for determining Waste Discharge Requirements (WDRs), taking enforcement actions, and evaluating clean water grant proposals. Porter-Cologne also assigns responsibility for implementing CWA Sections 401, 402, and 303(d) to the SWRCB and RWQCBs.

The Water Quality Control Plan for the Tulare Lake Basin (Basin Plan), revised January 2004 (with approved amendments), designates the following beneficial uses of surface water for westside streams within the basin: agricultural supply, industrial service and process supply, contact and noncontact water recreation, warm fresh water habitat, preservation of rare, threatened and endangered species, and groundwater recharge. The Basin Plan also classifies the groundwater and spring water within one-half mile of the project site as having no beneficial uses (RWQCB 2004).

California Department of Fish and Wildlife

The California Lake and Streambed Alteration Program, Section 1602 of the Fish and Game Code (FGC), regulates activities that would “substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed of a natural watercourse” that supports wildlife resources. The CDFW have authority to review and regulate all proposed alterations of streambeds.

California Water Code Section 13260

California Water Code Section 13260 requires that any person discharging waste or proposing to discharge waste that could affect the quality of the waters of the State, other than into a community sewer system, must submit a report of waste discharge to the applicable RWQCB. The RWQCB is responsible for issuing WDRs for any facility that discharges or proposes to discharge waste that may affect groundwater quality. This may include systems that have waste storage systems with land disposal, such as a seasonal storage and reuse. Potential dischargers must file a complete Report of Waste Discharge (RWD) with the RWQCB at least 120 days prior to discharging waste. Issuance of WDRs for a permit is based on information provided in the RWD. WDRs may set effluent standards for activities that do not pose a threat or nuisance to water quality.

NPDES General Construction Permit

Construction of the proposed project must comply with the requirements of the NPDES permit for Discharges of Storm Water Runoff Associated with Construction Activity [General Order No. 2012-0006-DWQ (NPDES No. CAS000002)]. This permit regulates discharges from construction sites that disturb one acre or more of total land area. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least one acre of total land area must comply with the provisions of the NPDES Permit and develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must include Best Management Practices (BMPs) to reduce pollutants and any more stringent controls necessary to meet water quality standards.

Local

Tulare County General Plan

Health and Safety – 10.5 Flood Hazards

HS-5

To minimize the possibility for loss of life, injury, or damage to property as a result of flood hazards.

HS-5.1 Development Compliance with Federal, State, and Local Regulations

The County shall ensure that all development within the designated floodway or floodplain zones conform with FEMA regulations and the Tulare County Flood Damage Prevention

Ordinance. New development and divisions of land, especially residential subdivisions, shall be developed to minimize flood risk to structures, infrastructure, and ensure safe access and evacuation during flood conditions.

HS-5.2 Development in Floodplain Zones

The County shall regulate development in the 100-year floodplain zones as designated on maps prepared by FEMA in accordance with the following:

1. Critical facilities (those facilities which should be open and accessible during emergencies) shall not be permitted.
2. Passive recreational activities (those requiring non-intensive development, such as hiking, horseback riding, picnicking) are permissible.
3. New development and divisions of land, especially residential subdivisions, shall be developed to minimize flood risk to structures, infrastructure, and ensure safe access and evacuation during flood conditions.

HS-5.7 Mapping of Flood Hazard Areas

The County shall require tentative and final subdivision maps and approved site plans to delineate areas subject to flooding during a 100-year flood event.

Water Resources – 11.1 General

WR-1

To provide for the current and long-range water needs of the County and for the protection of the quality and quantity of surface and groundwater resources.

WR-1.1 Groundwater Withdrawal

The County shall cooperate with water agencies and management agencies during land development processes to help promote an adequate, safe, and economically viable groundwater supply for existing and future development within the County. These actions shall be intended to help the County mitigate the potential impact on ground water resources identified during planning and approval processes.

WR-1.2 Groundwater Monitoring

The County shall support the collection of monitoring data for facilities or uses that are potential sources of groundwater pollution as part of project approvals, including residential and industrial development

WR-1.4 Conversion of Agricultural Water Resources

For new urban development, the County shall discourage the transfer of water used for agricultural purposes (within the prior ten years) for domestic consumption except in the following circumstances:

1. The water remaining for the agricultural operation is sufficient to maintain the land as an economically viable agricultural use,
2. The reduction in infiltration from agricultural activities as a source of groundwater recharge will not significantly impact the groundwater basin.

WR-1.5 Expand Use of Reclaimed Wastewater

To augment groundwater supplies and to conserve potable water for domestic purposes, the County shall seek opportunities to expand groundwater recharge efforts

WR-1.6 Expand Use of Reclaimed Water

The County shall encourage the use of tertiary treated wastewater and household gray water for irrigation of agricultural lands, recreation, and open space areas, and large landscaped areas as a means of reducing demand for groundwater resources.

*Water Resources – 11.2 Water Quality***WR-2**

To provide for the current and long-range water needs of the County and for the protection of the quality of surface water and groundwater resources.

WR-2.1 Protect Water Quality

All major land use and development plans shall be evaluated as to their potential to create surface and groundwater contamination hazards from point and non-point sources. The County shall confer with other appropriate agencies, as necessary, to assure adequate water quality review to prevent soil erosion, direct discharge of potentially harmful substances; ground leaching from storage of raw materials, petroleum products, or wastes. floating debris; and runoff from the site.

WR-2.2 National Pollutant Discharge Elimination System (NPDES) Enforcement

The County shall continue to support the State in monitoring and enforcing provisions to control non-point source water pollution contained in the U.S. EPA NPDES program as implemented by the Water Quality Control Board.

WR-2.3 Best Management Practices (BMPs)

The County shall continue to require the use of feasible BMPs and other mitigation measures designed to protect surface water and groundwater from the adverse effects of construction activities, agricultural operations requiring a County Permit and urban runoff in coordination with the Water Quality Control Board.

WR-2.4 Construction Site Sediment Control

The County shall continue to enforce provisions to control erosion and sediment from construction sites.

WR-2.6 Degraded Water Resources

The County shall encourage and support the identification of degraded surface water and groundwater resources and promote restoration where appropriate.

WR-2.7 Industrial and Agricultural Sources

The County shall work with agricultural and industrial concerns to ensure that water contaminants and waste products are handled in a manner that protects the long-term viability of water resources in the County.

3.5.10.3 Impact Analysis

a) Would the project violate any water quality standards or waste discharge standards?

Implementation of the proposed project would not conflict with applicable water quality and waste discharge standards relating to hydrology and water quality. The proposed project would comply with all requirements established by the Central Valley Regional Water Quality Control Board (CVRWQCB). KEBO proposes to use a closed loop system; accordingly, no sump would be constructed as part of this project. Above ground portable tanks would be used for mixing and storing drilling fluids. All fluids would be disposed of in accordance with the requirements of the CVRWQCB. The solids that accumulate in the above ground tanks would be transported offsite for disposal. If any wastes test positive for hazardous material KEBO will be disposed of at the Waste Management Kettleman Hills Facility, a licensed Class 1, 2 and 3 treatment, storage, and disposal facility. This facility is permitted to receive up to 2,000 tons/day (*Active Landfills Profile*, www.calrecycle.ca.gov) and is located approximately 60 miles due west of this location.

As stated previously, according to the California Oil and Gas Fields, Volume 1 – Central California Report (1998), the base of fresh water in the Jasmin Oil Field (closest oil field to the proposed project site) is at a depth of 2,750 feet. The California State Water Resources Control Board reported that the groundwater elevation for the nearest well (ID#24S26E12H001M) located approximately 1.25 miles east was 378 feet below grad surface on January 13, 2014 and well (ID# 24S26E13D001M) located approximately 1.3 miles south was 295.5 feet on March 8, 2016. As a result, groundwater is not expected to be encountered during site preparation or other project surface activity and operations. KEBO would use a closed loop system and contain all drilling muds in aboveground tanks. The project would not cause direct or indirect wastewater discharges that would result in an exposure to levels of hazardous materials that would adversely affect human health, wildlife, or plant species. The proposed project would comply with all water quality and waste discharge standards established by CVRWQCB.

Further, in compliance with CalGEM regulations, California Code of Regulations (CCR) Title 14 Division 2, Chapter 4, Articles 3, KEBO shall install and cement surface casing to prevent blowouts and contamination of freshwater aquifers. CalGEM regulations specify that the base of fresh water must be protected with cemented casing to prevent any contamination from migrating fluids encountered in oil and gas zones. The regulations also specify that oil and gas zones must be protected with cemented casing to prevent any contamination from infiltrating water. CalGEM engineers review the drilling and completion operations to ensure these requirements have been met. No production water is anticipated. No impact.

b) Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned

uses for which permits have been granted)?

All water requirements for the proposed project would be purchased from a local farmer and no new entitlements would be required. The proposed project would use existing surface water entitlements and would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Therefore, the proposed project would have no impact on groundwater supplies.

- c) *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on-or off-site?*

The proposed project would not substantially alter the current drainage pattern of the site. The proposed project would not alter the course of any stream or river. The project areas would maintain their existing drainage patterns, such as drains, drainage canals, swales, or other water drainage appurtenances. The proposed project would create minimal runoff as the proposed project site is flat. No impact.

- d) *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or off-site?*

As discussed in answer 3.5.9.3 (c), the proposed project would not alter the course of any stream or river nor would the proposed project substantially alter the existing drainage pattern of the project area. No impact.

- e) *Would the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?*

There are no existing or planned stormwater drainage systems in the project area; therefore, the capacity of these systems cannot be exceeded. The total project area of disturbance is 0.91 acres. As the proposed project is less than 1.0 acre, KEBO would not be required to submit a Notice of Intent (NOI) to the State Water Resources Control Board. Additionally, KEBO would not be required to prepare and submit a Storm Water Pollution Prevention Plan according to the terms of the General Permit to Discharge Storm Water with Construction Activity (WQ Order No. 2009-0009 DWQ). As a result, the proposed project would have no impact on runoff.

- f) *Would the project otherwise substantially degrade water quality?*

As discussed in 3.5.9.3 (a-e), the proposed project would use a closed system for drill mud and fluids, meet with CalGEM requirements for cementing casings and blow out prevention to prevent contamination of fresh water aquifers and would not substantially alter drainage

patterns to cause erosion or flooding on- or off-site. The proposed project would not cause any reasonably foreseeable direct or indirect impacts to water quality, including those from wastewater discharges that would result in an exposure to levels of waste materials that would adversely affect human health, wildlife or plant species. No impact.

g) Would the project place housing within a 100-year flood hazard area?

The proposed project site is not located within the 100-year flood zone (A). In addition, the proposed project does not include construction of any housing within a 100-year flood hazard area. No impact.

h) Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

The proposed project site is not located within the 100-year flood zone (A). No impact.

I) Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

The proposed project site is not located within the 100-year flood zone (A). There are no dams within 25 miles of the proposed project site. Based upon the result of the site visit conducted by Booher Consulting LLC on August 7 and September 20, 2019, there were no levees observed in vicinity of the proposed project site. Accordingly, implementation of the proposed project as proposed would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. No impact.

j) Would the project inundation by mudflow?

No evidence of past mudflows was observed within or adjacent to the proposed project site. The proposed project would not be impacted by mudflow due to the topography of the area. No impact.

3.5.10.4 Mitigation Measures

No impact identified. No mitigation necessary.

3.5.10.5 References

Calflora, *Watersheds in Tulare County*

Website: [http://www.calflora.org/app/wgh?page=wcprofile\\$cc=TUL](http://www.calflora.org/app/wgh?page=wcprofile$cc=TUL)

California Department of Conservation, *California Oil & Gas Fields Volume 1 – Central California*

Website: http://www.conservation.ca.gov/dog/pubs_stats/Pages/technical_reports.aspx

California Department of Water Resources, *Water Data Library*. Accessed in 2019
Website: <http://www.water.ca.gov/waterdatalibrary/>

Federal Emergency Management Agency, *Map Service Center*. Accessed in 2019
Website: <http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping>

State Water Resources Control Board, *Construction General Permit Risk Assessment R-Factor Calculation Notification*. Accessed in 2019
Website: www.swrcb.ca.gov/water_issues/programs/stormwater/docs/constpermits/cgp_r_factor

SECTION 3.5.11 – Land Use and Planning

ISSUES	Potentially Significant Impact		Less Than Significant with Mitigation Incorporated		Less Than Significant Impact		No Impact
LAND USE AND PLANNING <i>Would the project:</i>							
a. Physically divide an established community?	_____		_____		_____		X
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	_____		_____		_____		X
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	_____		_____		_____		X

3.5.11.1 Environmental Setting

The proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. Agriculture in proximity to the proposed project site spans an area approximately one (1) square mile in all directions from the proposed project site. Land uses within and adjacent to the proposed project site include agriculture and some oil and gas exploration and production activities. The proposed project site is located on property designated as Valley Agriculture (Rural Lands Plan) in the Tulare County 2012 General Plan. Consistent with the Tulare County General Plan Framework Concept 4: Natural and Cultural Resources of the Tulare County General Plan (Tulare County 2012), the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques. Additionally, the Tulare County General Plan Environmental Resource Management (ERM 3.3, 3.4 and 3.5) states that the County shall allow oil and gas extraction activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land (see Figure 2). The proposed project area is zoned Exclusive Agriculture (AE-20).

3.5.11.2 Regulatory Setting

Federal

No federal laws or regulations related to land use are applicable to the project.

State

No state laws or regulations related to land use are applicable to the project.

Local

Tulare County General Plan

The State of California Government Code 65300 requires Tulare County to prepare and adopt a general plan. The 2030 Tulare County General Plan was last revised and approved in 2012. Its purpose is to give long-range guidance to County officials making decisions affecting the growth and resources of Tulare County. The Tulare County General Plan helps to ensure that day -to-day planning and land use decisions are in conformance with the long-range program designed to protect and further the public interest. It would be periodically reviewed and updated as the goals and requirements of the community evolve and change. General Plan goals and policies relevant to the proposed project are provided below.

Concept 4: Natural and Cultural Resources

As Tulare County develops its unincorporated communities, the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques.

ERM-3.3 Small-Scale Oil and Gas Extraction

The County shall allow by Special Use Permit small-scale oil and gas extraction activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land and are within an established oil and gas field outside of a UDB.

ERM-3.4 Oil and Gas Extraction

Facilities related to oil and gas extraction and processing in the County may be allowed in identified oil and gas fields subject to a special use permit. The extraction shall demonstrate that it will be compatible with surrounding land uses and land use designations.

Tulare County Zoning Ordinance

AE-20 Exclusive Agriculture Zone

The AE-20 Zone is an exclusive zone for intensive agricultural uses and for those uses which are a necessary and integral part of the agricultural operation. The purpose of this zone is to protect the general welfare of the agricultural community from encroachments of unrelated agricultural uses which, by their nature, would be injurious to the physical and economic well- being of the agricultural community. It is also the purpose of this zone to prevent or to minimize the negative interaction between various agricultural uses. A related purpose of this zone is to disperse intensive animal agricultural uses to avoid air, water, or land pollution otherwise resulting from compact distributions of such uses. The minimum parcel size permitted to be created in this zone is, with certain exceptions, twenty (20) acres.

3.5.11.3 Impact Analysis

a) Would the project physically divide an established community?

The proposed project site would not physically divide an established community because the proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. No impact.

b) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

The proposed project is consistent with the Tulare County General Plan Framework Concept 4: Natural and Cultural Resources of the Tulare County General Plan (Tulare County 2012), the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques. Additionally, the Tulare County General Plan Environmental Resource Management (ERM 3.3, 3.4 and 3.5) states that the County shall allow oil and gas extraction activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land. No impact.

c) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans or other approved local, regional, or state habitat conservation plans in the project area. No Impact.

3.5.11.4 Mitigation Measures

No impact identified. No mitigation necessary.

3.5.11.5 References

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online:
<http://generalplan.co.tulare.ca.us/>

Tulare County. Tulare County Zoning Ordinance. Accessed 2019.
Website: <https://tularecounty.ca.gov/rma/index.cfm/rma-documents/planning-documents/tulare-county-zoning-ordinance/>

California Department of Fish and Wildlife. *Conservation and Mitigation Banks in California Approved by the Department of Fish and Wildlife*. Accessed in 2019.
Website: <http://www.dfg.ca.gov/habcon/conplan/mitbank/catalogue/>

United States Fish and Wildlife Service. *Conservation Plans and Agreements Database*. Accessed in 2019. Website: http://ecos.fws.gov/conserv_plans/public.jsp

SECTION 3.5.12 – Mineral Resources

ISSUES	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
MINERAL RESOURCES <i>Would the project:</i>				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	_____	_____	_____	X
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	_____	_____	_____	X

3.5.12.1 Environmental Setting

Tulare County, including the general project area, serves as an important source of oil and natural gas. Oil facilities and transmission pipelines are located throughout the general project area. According to the CalGEM Well Finder, the proposed project site is not located within a designated oil and gas field. Oil fields in the general project area include the Jasmin and Terra Bella. According to CalGEM records, there are no oil and gas wells within one (1) mile of the proposed project site. The nearest new well is located 6.22 miles to the south of the proposed project site (Figure 10).

The objective of this project is to identify and develop further mineral resources. If successful, its impacts would enhance rather than negatively impact the realization of the values and policies protected by this specific issue area. If the project is not successful, the well would be plugged and abandoned in accordance to CCR Section 1723-1723.8, and the site restored, with no negative impact.

The proposed project is consistent with the Tulare County General Plan Framework Concept 4: Natural and Cultural Resources of the Tulare County General Plan (Tulare County 2012), the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques. Additionally, the Tulare County General Plan Environmental Resource Management (ERM 3.3, 3.4 and 3.5) states that the County shall allow oil and gas extraction activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land.

3.5.12.2 Regulatory Setting

Federal

No federal laws or regulations related to mineral resources are applicable to the project.

State

Surface Mining and Reclamation Act

The Surface Mining and Reclamation Act of 1975 (SMARA) requires the state geologist to classify mineral lands to help identify and protect mineral resources in areas within the state subject to urban expansion or other irreversible land uses that would preclude mineral extraction. SMARA also allows the state geologist to designate lands containing mineral deposits of regional or statewide significance. In 1980, SMARA was amended to provide classification of nonurban areas subject to land use decisions incompatible with mining.

Mineral lands are mapped under SMARA according to jurisdictional boundaries (i.e., counties, groups of counties, or major parts of counties) using the California Mineral Land Classification System. This classification focuses on identifying areas where (1) mining is likely to occur, and (2) significant mineral resource deposits may become inaccessible due to incompatible land uses over a 50-year period.

The state geologist developed the Mineral Resource Zone (MRZ) system to implement SMARA. These MRZ classifications are explained below:

- *MRZ-1* Areas where adequate geologic information indicates that no significant mineral deposits are present, or it is judged that little likelihood exists for their presence.
- *MRZ-2* Areas underlain by mineral deposits where geologic data show that significant measured or indicated resources are present.
 - MRZ-2a: Discovered mineral deposits that are either measured or indicated by evidence.
 - MRZ-2b: Discovered mineral deposits that are either inferred or cannot be economically extracted by current technology.
- *MRZ-3* Areas containing known mineral deposits that may qualify as mineral resources, but additional analysis is necessary to determine their significance as a mineral resource.
 - MRZ-3a: Known mineral occurrence.
 - MRZ-3b: Inferred mineral occurrence.
- *MRZ-4* Areas where geologic information does not rule out either the presence or absence of mineral resources.

Local

Tulare County General Plan

The State of California Government Code 65300 requires Tulare County to prepare and adopt a general plan. The 2030 Tulare County General Plan was last revised and approved in 2012. Its purpose is to give long-range guidance to County officials making decisions affecting the growth and resources of Tulare County. The Tulare County General Plan helps to ensure that day -to-day planning and land use decisions are in conformance with the long-range program designed to protect and further the public interest. It would be periodically reviewed and updated as the goals and requirements of the community evolve and change. General Plan goals and policies relevant to the proposed project are provided below.

Concept 4: Natural and Cultural Resources

As Tulare County develops its unincorporated communities, the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques.

Environmental Resource Management 8.3 – Mineral Resources - Other

ERM-3

To protect the current and future extraction of mineral resources that are important to the County's economy while minimizing impacts of this use on the public and the environmental.

ERM-3.3 Small-Scale Oil and Gas Extraction

The County shall allow by Special Use Permit small-scale oil and gas extraction activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land and are within an established oil and gas field outside of a UDB.

ERM-3.4 Oil and Gas Extraction

Facilities related to oil and gas extraction and processing in the County may be allowed in identified oil and gas fields subject to a special use permit. The extraction shall demonstrate that it will be compatible with surrounding land uses and land use designations.

Tulare County Zoning Ordinance

AE-20 Exclusive Agriculture Zone

The AE-20 Zone is an exclusive zone for intensive agricultural uses and for those uses which are a necessary and integral part of the agricultural operation. The purpose of this zone is to protect the general welfare of the agricultural community from encroachments of unrelated agricultural uses which, by their nature, would be injurious to the physical and economic well-being of the agricultural community. It is also the purpose of this zone to prevent or to minimize the negative interaction between various agricultural uses. A related purpose of this zone is to disperse intensive animal agricultural uses to avoid air, water, or land pollution otherwise

resulting from compact distributions of such uses. The minimum parcel size permitted to be created in this zone is, with certain exceptions, twenty (20) acres.

3.5.12.3 Impact Analysis

- a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*

The proposed project would not result in the loss of availability of a known mineral resource. No impact.

- b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*

The proposed project would not result in the loss of availability of a locally important mineral resource recovery site. No impact.

3.5.12.4 Mitigation Measures

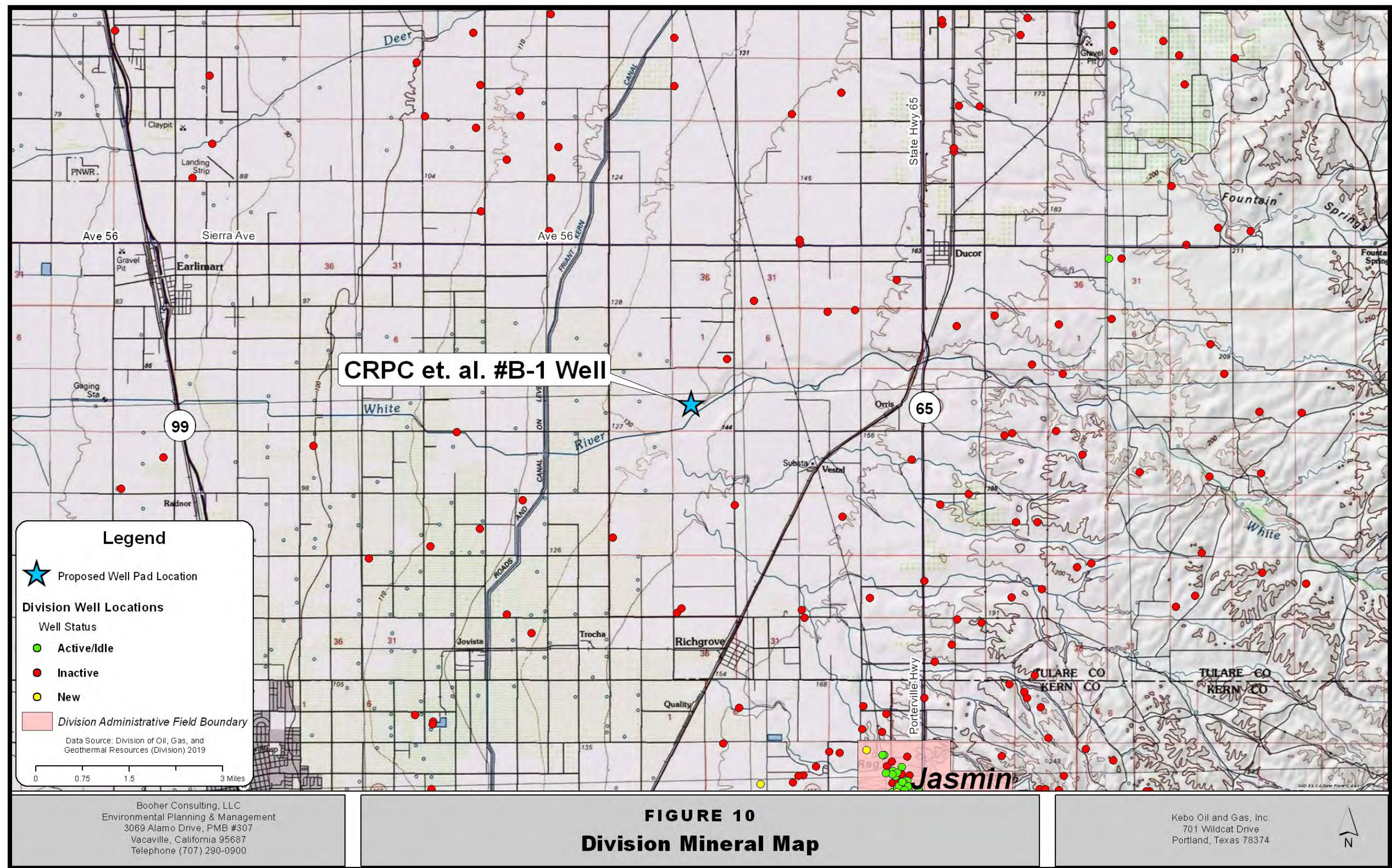
No impact identified. No mitigation necessary.

3.5.12.5 References

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online:
<http://generalplan.co.tulare.ca.us/>

Tulare County. Tulare County Zoning Ordinance. Accessed 2019.
Website: <https://tularecounty.ca.gov/rma/index.cfm/rma-documents/planning-documents/tulare-county-zoning-ordinance/>

State of California, Geologic Energy Management Division (formerly Department of Conservation, Division of Oil, Gas and Geothermal Resources). Well Finder. Accessed in 2019.
Website: <https://maps.conservation.ca.gov/doggr/wellfinder/#openModal/-119.11955/35.85473/11>



SECTION 3.5.13 – Noise

ISSUES	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
NOISE <i>Would the project:</i>				
a. Exposure of people to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	_____	_____	X	—
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	_____	_____	X	_____
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	_____	_____	_____	X
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	_____	_____	_____	X
e. For a project located within 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?	_____	_____	_____	X
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	_____	_____	_____	X

3.5.13.1 Environmental Setting

The proposed project is consistent with the Tulare County General Plan Framework Concept 4: Natural and Cultural Resources of the Tulare County General Plan (Tulare County 2012), the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques.

3.5.13.2 Regulatory Setting

Federal

The Noise Control Act establishes a national policy to promote an environment for all Americans free of noise that jeopardizes their health and welfare. The Act serves to establish a means for effective coordination of Federal research and activities in noise control. It also authorizes the establishment of Federal noise emissions standards for products distributed in commerce and provides information to the public with respect to the noise-emission and noise-reduction characteristics of such products.

Occupational Safety and Health Administration Occupational Noise Exposure, Hearing Conservation Amendment

The standard stipulates that protection against the effects of noise exposure shall be provided for employees when sound levels exceed 90 dBA over an 8-hour exposure period. Protection shall consist of feasible administrative or engineering controls. If such controls fail to reduce sound levels to acceptable levels, personal protective equipment shall be provided and used to reduce exposure of the employee. Additionally, a Hearing Conservation Program must be instituted by the employers whenever employee noise exposure equals or exceeds the action level of an 8-hour time-weighted average sound level of 85 dBA. The Hearing Conservation Program requirements consider periodic area and personal noise monitoring, the performance and evaluation of audiograms, the provision of hearing protection, annual employee training, and record keeping.

State

The State of California requires all municipalities to prepare and adopt a comprehensive long-range general plan. Noise is one the required elements of general plans (California Government Code Section 65302(f) and Section 46050.1 of the Health and Safety Code). The requirements for the noise element of the general plan include describing the noise environment quantitatively using a cumulative noise metric such as CNEL, establishing noise/land use compatibility criteria, and establishing programs for achieving and/or maintaining land use compatibility. Noise elements should address all major noise sources in the community, including mobile and stationary noise sources.

CEQA (Public Resources Code [PRC] Section 21000 et seq.) requires the identification of “significant” environmental impacts and their feasible mitigation. Section XI of Appendix G to the State CEQA Guidelines (California Code of Regulations [CCR] Title 14, Appendix G) lists some indicators of potentially significant impacts, which are included below under Thresholds of Significance.

CEQA does not define a threshold for “significant increase” with respect to noise exposure; however, based on human response and commonly applied industry standards, the following thresholds of significance would be applied to the proposed project, as set forth by the State CEQA Guidelines:

- The project causes the ambient noise level measured at the property line of affected uses to increase by 3 dBA in CNEL, to a level at or within the “normally unacceptable” or “clearly unacceptable” noise/land use compatibility category; or
- The project causes any 5 dBA or greater noise increase.

The illustration below presents general State of California guidelines for environmental noise levels and land use compatibility. These guidelines are used by many agencies, environmental planners, and acoustical specialists as a starting point when evaluating potential noise impacts related to a proposed project.

Local

Tulare County General Plan

The policies and implementation measures in the Tulare County General Plan related to noise, applicable to the proposed project, are outlined below.

HS-8.3 Noise Sensitive Land Uses

The County shall not approve new noise sensitive uses unless effective mitigation measures are incorporated into the design of such projects to reduce noise levels to 60 dB Ldn (or CNEL) or less within outdoor activity areas and 45 dB Ldn (or CNEL) or less within interior living spaces.

HS-8.6 Noise Level Criteria

The County shall ensure noise level criteria applied to land uses other than residential or other noise-sensitive uses are consistent with the recommendations of the California Office of Noise Control (CONC).

HS-8.8 Adjacent Uses

The County shall not permit development of new industrial, commercial, or other noise generating land uses if resulting noise levels will exceed 60 dB Ldn (or CNEL) at the boundary of areas designated and zoned for residential or other noise-sensitive uses, unless it is determined to be necessary to promote the public health, safety and welfare of the County.

HS-8.11 Peak Noise Generators

The County shall limit noise generating activities, such as construction, to hours of normal business operation (7 a.m. to 7 p.m.). No peak noise generating activities shall be allowed to occur outside of normal business hours without County approval.

HS-8.13 Noise Analysis

The County shall require a detailed noise impact analysis in areas where current or future exterior noise levels from transportation or stationary sources have the potential to exceed the adopted noise policies of the Health and Safety Element, where there is development of new noise sensitive land uses or the development of potential noise generating land uses near existing sensitive land uses. The noise analysis shall be the responsibility of the project

applicant and be prepared by a qualified acoustical engineer (i.e., a Registered Professional Engineer in the State of California, etc.). The analysis shall include recommendations and evidence to establish mitigation that will reduce noise exposure to acceptable levels (such as those referenced in Table 10-1 of the Health and Safety Element below).

HS-8.14 Sound Attenuation Features

The County shall require sound attenuation features such as walls, berming, heavy landscaping, between commercial, industrial, and residential uses to reduce noise and vibration impacts.

HS-8.18 Construction Noise

The County shall seek to limit the potential noise impacts of construction activities by limiting construction activities to the hours of 7 am to 7pm, Monday through Saturday when construction activities are located near sensitive receptors. No construction shall occur on Sundays or national holidays without a permit from the County to minimize noise impacts associated with development near sensitive receptors.

HS-8.19 Construction Noise Control

The County shall ensure that construction contractors implement best practices guidelines (i.e. berms, screens, etc.) as appropriate and feasible to reduce construction-related noise impacts on surrounding land uses.

Table 10.1 Land Use Compatibility for Community Noise Environments

Land Use Category		Community Noise Exposure- L_{dn} or CNEL (dB)						
		50	55	60	65	70	75	80
Residential - Low Density Single Family, Duplex, Mobile Homes		Normally Acceptable		Conditionally Acceptable		Normally Unacceptable		Clearly Unacceptable
Residential – Multi-Family		Normally Acceptable		Conditionally Acceptable		Normally Unacceptable		Clearly Unacceptable
Transient Lodging – Motels, Hotels		Normally Acceptable		Conditionally Acceptable		Normally Unacceptable		Clearly Unacceptable
Schools, Libraries, Churches, Hospitals, Nursing Homes		Normally Acceptable		Conditionally Acceptable		Normally Unacceptable		Clearly Unacceptable
Auditoriums, Concerts Halls, Amphitheaters		Normally Acceptable		Conditionally Acceptable		Normally Unacceptable		Clearly Unacceptable
Sports Arenas, Outdoor Spectator Sports		Normally Acceptable		Conditionally Acceptable		Normally Unacceptable		Clearly Unacceptable
Playgrounds, Neighborhood Parks		Normally Acceptable		Conditionally Acceptable		Normally Unacceptable		Clearly Unacceptable
Golf Courses, Riding Stables, Water Recreation, Cemeteries		Normally Acceptable		Conditionally Acceptable		Normally Unacceptable		Clearly Unacceptable
Office Buildings, Business Commercial and Professional		Normally Acceptable		Conditionally Acceptable		Normally Unacceptable		Clearly Unacceptable
Industrial, Manufacturing, Utilities, Agriculture		Normally Acceptable		Conditionally Acceptable		Normally Unacceptable		Clearly Unacceptable
	Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.						
	Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.						
	Normally Unacceptable	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.						
	Clearly Unacceptable	New construction or development generally should not be undertaken.						

[Source: Figure Noise-1. State Land Use Compatibility Standards for Community Noise Environment: California Governor's Office of Planning and Research, October 2003]

3.5.13.3 Impact Analysis

a) Would the project exposure of people to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

The U.S. EPA has found that the noisiest equipment types operating at construction sites typically range from 88 dBA to 101 dBA at a distance of 50 feet. Table 3.5.13.3-1 below lists noise levels typically generated by construction equipment; however, not all equipment listed would be used during the proposed project.

Table 3.5.13.3-1
Noise Level Generated by Construction Equipment

Type of Equipment	Typical Sound Level (dBA at 50 feet)
Pump	76
Generator	76
Air Compressor	81
Concrete Mixer (truck)	85
Pneumatic Tools	85
Backhoe	85
Excavator	86
Dozer	87
Front-End Loader	88
Dump Truck	88
Jack Hammer	88
Scraper	88
Pavers	89
Pile Driver	101

Sources: U.S. Environmental Protection Agency, 1974; Noise Control for Building and Manufacturing Plants, BBN Layman Miller Lecture Notes, 1987.

In order to determine typical sound levels associated with oil and gas well drilling operations, Booher Consulting, LLC formerly known as Robert A. Booher Consulting previously conducted a sound survey on November 18, 2011 of Kenai #38, a double drill rig located in Santa Barbara, California. KEBO anticipates using an equivalent drilling rig to drill its proposed well. There were no barriers between the drilling rig and the location where noise levels were recorded. Noise was measured continuously for a 24-hour period and a measurement was taken every hour.

Booher Consulting, LLC used a using a Metrosonics 3080 Metrologger, Portable Audio Dosimeter to record noise level measurements. The meter was calibrated before and after use to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

At the time of our survey, all drilling equipment was operating including multiple engines and both drilling mud pumps. The results of the survey are presented below in Table 3.5.13.3-2.

Table 3.5.13.3-2
Sound Survey Kenai Rig #38

Distance (feet)	North (dBA)	South (dBA)	West (dBA)	East (dBA)
50	87	78	85	83
100	80	72	78	76
150	75	68	72	69

Based on sound levels presented in Table 1, equipment associated with the operation of a Kenai Rig #38 could produce noise levels in the range of 78 to 87 dBA at a distance of 50 feet from the drill rig and pumps/engines. Noise levels at 100 feet from the operation could range from 72 to 80 dBA, while levels at 150 feet could range from 68 to 75 dBA.

The highest sound levels were recorded at the north side of the drill site where the largest engine was operating. Noise levels were significantly lower at the south side of the drill site where less equipment was operating.

Using the U.S. EPA's construction equipment noise level data (Table 3.5.13.3-1) and the result of the Boohar Consulting, LLC Kenai Rig #38 survey data (Table 3.5.13.3-2), equipment associated with drilling operations would produce maximum sound levels of 87 dBA during drilling. The closest residence to the proposed project site is located approximately 1.01 mile (5,333 feet) to the northwest of the proposed project site. Noise level at the closest residence to the proposed project site was calculated using the equation below.

$$\begin{aligned}
 L_1 &= L_2 + 20\log_{10}(R_2/R_1) \\
 L_2 &= L_1 - 20\log_{10}(R_2/R_1) \\
 L_2 &= 87 - 20\log_{10}(5,333'/50') \\
 L_2 &= 87 - 40.6 \\
 L_2 &= \mathbf{46.4 \text{ dBA}}
 \end{aligned}$$

$$\Delta L = L_1 - L_2$$

L_1 = Sound level at Object 1, the dosimeter of the noise source (87 dBA).

L_2 = Estimated sound Level at Object 2, the nearest residence

R_1 = Distance from the source of noise to the dosimeter (50 feet)

R_2 = Distance from the source of noise to the nearest residence (5,333 feet)

Production activities will result in long term noise impacts. In order to quantify these impacts, Booher Consulting, LLC formerly known as Robert A. Booher Consulting conducted a sound survey at the Petrorock LLC Duff Shell #13 site located in the Edison Oil Field in Kern County, California. Booher Consulting, LLC used an Extech Instrument integrating sound level datalogger model # 407780. At the time of our surveys, the only equipment operating was a Lufkin 228 pumping unit powered by a 20 horse power Toshiba International Corporation 3-phase motor, Model# WWE15-0-28GT. It is our understanding KEBO will install a 15 horsepower pumping unit so the noise levels at the nearest residence will be even lower than what is calculated below. Sound monitoring was performed on August 9, 2011, and monitoring started at 7:05 pm and finished at 7:40 pm. Weather conditions at the time were clear with no wind, and a temperature of 93 degrees Fahrenheit. Sound measurements were collected at various distances from the pumping unit. The results of the survey are presented in Table 3.5.13.3-3.

Table 3.5.13.3-3
Sound Survey Measurements (dBA) – 20 HP Pumping Unit

Direction From Unit	50 feet	100 feet	150 feet
North	47.8	39.9	34.1
South	48.6	40.6	37.1
East	44.7	37.6	32.3
West	51.0	43.4	38.1

Based on the data in Table 3.5.13.3-3, the maximum sound level resulting from production activities of the well will be 51.0 dBA at a distance of 50 feet from the pumping unit. The nearest residence to the proposed project site is located 1.01 miles (5,333 ft.) to the northwest. The noise level during production at the closest residence to the proposed project site was calculated to be 10.4 dBA using the equation below (www.animations.physics.unsw.edu).

$$L_1 = L_2 + 20 \log_{10} (R_2/R_1)$$

$$L_2 = L_1 - 20 \log_{10} (R_2/R_1)$$

$$L_2 = 51.0 - 20 \log_{10} (5,333'/50')$$

$$L_2 = 51.0 - 40.6$$

$$L_2 = \mathbf{10.4 \text{ dBA}}$$

$$\Delta L = L_1 - L_2$$

L_1 = Sound level at Object 1, the dosimeter of the noise source (51.0 dBA).

L_2 = Estimated sound Level at Object 2, the nearest residence

R_1 = Distance from the source of noise to the dosimeter (50 feet)

R_2 = Distance from the source of noise to the nearest residence (5,333 feet)

Based upon the results presented above, the outdoor noise level at the nearest residence is expected to be a maximum of 46.4 dBA during project activities. The proposed project would be in compliance with the Tulare County Health and Safety Element (HS-8.2) as well as the Land Use Compatibility for Community Noise Environments Table 10.1. The Tulare

County General Plan Noise Element establishes a 60 dBA as the maximum noise level before mitigation measures are needed. Accordingly, noise impacts at the nearest residence throughout the life of the project are well within established limits.

State and federal standards set by the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) regulate worker exposure time to sound levels above 90 decibels. However, the outdoor noise level at the edge of the proposed project site is expected to be 83.5 dBA [$L_2 = 87 - 20\log_{10} (75'/50')$] during drilling activities and 47.5 dBA [$L_2 = 51.0 - 20\log_{10} (75'/50')$] during production. Accordingly, farm personnel working in the vicinity of the proposed project site would not be exposed to sound levels exceeding state or federal standards. Therefore, people would not be exposed to noise levels in excess of applicable standards. The proposed project would have a less than significant impact on noise.

b) Would the project exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Vibration is oscillating motion of structures or the ground. The rumbling sound caused by the vibration in the ground is called ground-borne vibration. The proposed project is expected to create ground-borne vibration as a result of project activities (e.g. during drilling and production activities). Two elements need to be generally concerned regarding ground-borne vibration impacts: damage to buildings and annoyance to humans.

One of the accepted measurements for evaluating building damage associated with ground-borne vibration is peak particle velocity (PPV). According to the U.S. Department of Transportation, Surface Transportation Board (2009), "PPV is the maximum instantaneous positive or negative peak of the vibration signal, measured as distance per time (inches per second). PPV has been used historically to evaluate shock wave type vibrations from actions like blasting, pile driving and mining activities and their relationship to building damage." Table 3.5.13.3-4 shows effects of continuous construction vibrations on buildings.

Table 3.5.13.3-4*
Damage to Buildings at Various Continuous Vibration Levels

Peak Particle Velocity (in/sec)	Effects on Buildings
0.0006-0.019	Vibrations unlikely to cause damage of any type.
0.08	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected.
0.10	Virtually no risk of "architectural" damage to normal buildings.
0.20	Threshold at which there is a risk of "architectural" damage to normal dwelling walls and ceilings. Special types of finish

	such as lining of walls, flexible ceiling treatment, etc., would minimize “architectural” damage.
0.4-0.6	Vibrations at a greater level than normally expected from traffic but would cause “architectural” damage and possibly minor structure damage.

* “A Survey of Traffic-Induced Vibrations” by Whiffen and Leonard, Transport and Road Research Laboratory, RRL Report LR418, Crowthorne, Barkshire, England, 1971.

In order to estimate ground-borne vibration impacts associated with the proposed project activities, Booher Consulting, LLC retained the services of Gasch Geophysical Services, Inc. (GGSI) to conduct a ground vibration monitoring study in 2012 of a triple rig operating near Lost Hills, California. The proposed study used InstanTel vibration monitoring instruments and all units were calibrated according to manufacturer’s specifications. A 3-component tri-axial geophone was utilized to record vibration levels in the longitudinal (toward the source), transverse (horizontally orthogonal to the longitudinal direction), and vertical (up and down) directions. Measurements were recorded on two sides (north side and south side) of the drill rig. The power system including mud pumps, water and fuel storage and compressors were located on the north side of the drill rig. The catwalk and other minor transient vibration generating equipment were located on the south side of the drill rig. The results of the study are presented in Table 3.5.13.3-5.

Table 3.5.13.3-5*
Vibration Monitoring Study Results

Distance from Drill Hole (feet)	Transverse Direction PPV (in/sec)	Vertical Direction PPV (in/sec)	Longitudinal Direction PPV (in/sec)
87 feet north	0.0550	0.105	0.0600
152 feet north	0.0400	0.0300	0.0200
225 feet north	0.0150	0.01000	0.01000
321 feet north	0.01000	0.01000	0.01000
105 feet south	0.0150	0.01000	0.01000
188 feet south	0.0150	0.0150	0.01000
335 feet south	0.01000	0.01000	0.01000

*Gasch Geophysical Services, Inc. Vibration Monitoring of a Large Drill Rig, December 2012.

GGSI recorded a PPV of 0.105 inches/second at a distance of 87 feet from the hole during drilling activities associated with a triple rig. Please note that KEBO proposes to use a double rig so the number calculated below will actually be much less. The following calculation was used to determine the PPV (in/sec) at the nearest residence to the proposed project site.

$$PPV_{\text{equipment}} = PPV_{\text{ref}} (25/D)^n$$

Where:

PPV_{equipment} = peak particle velocity in in/sec of the equipment
adjusted for the distance

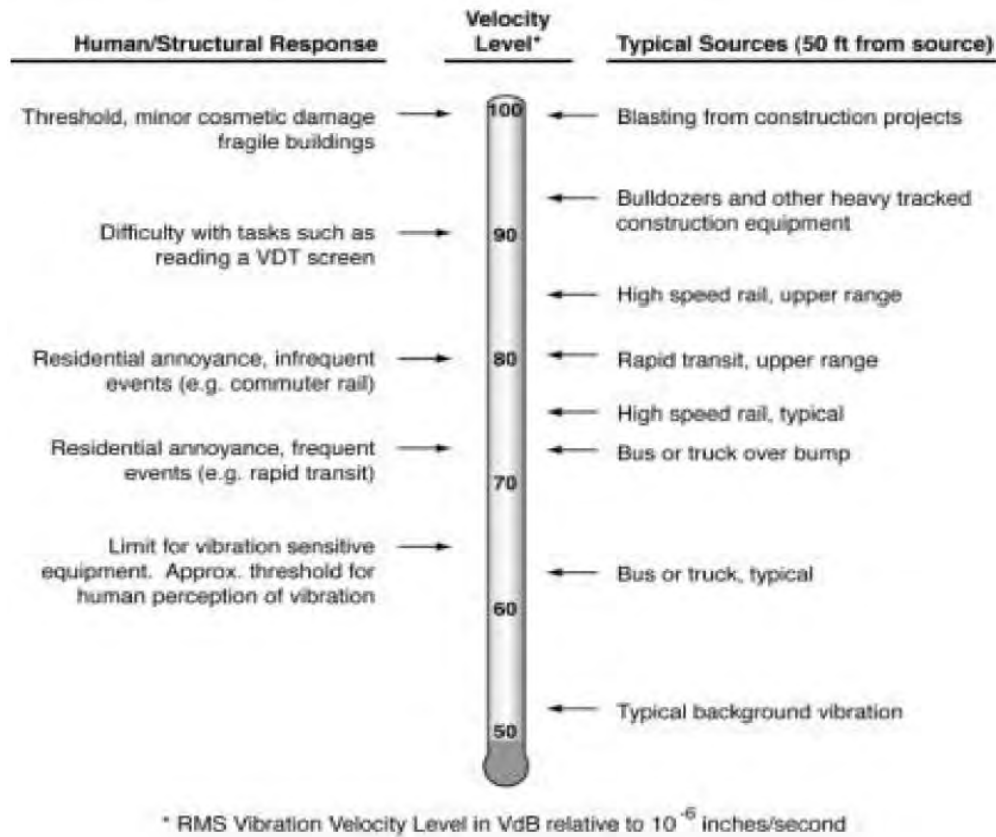
PPV_{ref} = reference vibration level in in/sec at 87 feet (drill rig)
D = distance from equipment to the nearest residence in feet
n = 1.5 (the value related to the attenuation rate through the ground)

$$\text{PPV} = 0.105(87/5,333)^{1.5} = 0.0002 \text{ in/sec}$$

The estimated PPV at the nearest residence is less than the threshold that would cause an effect on buildings at a PPV of 0.20 in/sec (See Table 3.5.13.3-5). Therefore, the estimated ground-borne vibration generated by the proposed project would have less than significant impact to structures.

Another widely accepted source of measurements, as an alternative to using PPV, for evaluating human annoyance associated with ground-borne vibration is root-mean-square (rms) amplitude. According to the U.S. Department of Transportation, Federal Transit Administration (2006), “It takes some time for human body to respond to vibration signals. In a sense, the human body responds to an average vibration amplitude. Because the net average of a vibration is zero, the root mean square (rms) amplitude is used to describe the “smoothed” vibration amplitude. The root mean square of a signal is the square root of the average of the squared amplitude of the signal. The average is typically calculated over a one-second period.” The rms, connoted as vibration decibels (VdB) on a log scale, is used to evaluate human annoyance against ground-borne vibration. Figure 11 shows the human/structural response to different levels of ground-borne vibration velocity levels.

Figure 11
Human/Structural Response to Different Levels of Ground-Borne Vibration Velocity Levels



According to the U.S. Department of Transportation, Federal Transit Administration (2006), the background vibration velocity level in residential areas is usually 50 VdB or lower. This is well below the threshold of perception for humans, which is around 65 VdB. The range of interest is from approximately 50 VdB to 100 VdB. Table 3.5.13.3-6 presents human responses as they relate to different levels of ground-borne noise and vibration.

Table 3.5.13.3-6
Human Response to Different Levels of Ground-borne Noise and Vibration

Vib. Velocity Level	Noise Level		Human Response
	Low Freq1	Mid Freq2	
65 VdB	25 dBA	40 dBA	Approximate threshold of perception for many humans. Low-frequency sound usually inaudible, mid-frequency sound excessive for quiet sleeping areas.
75 VdB	35 dBA	50 dBA	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find transit vibration at this level annoying. Low-frequency noise acceptable for sleeping areas, mid-frequency noise annoying in most quiet occupied areas.
85 VdB	45 dBA	60 dBA	Vibration acceptable only if there are an infrequent number of events per day. Low-frequency noise annoying for sleeping areas, mid-frequency noise annoying even for infrequent events with institutional land uses such as schools and churches.
Notes: 1. Approximate noise level when vibration spectrum peak is near 30 Hz. 2. Approximate noise level when vibration spectrum peak is near 60 Hz.			

In order to estimate ground-borne vibration impacts to humans by the proposed project activities, the velocity level in decibels, L_v (VdB) at the nearest residence to the proposed project site was calculated using the following equation:

$$L_v = 20 \times \log_{10}(v/v_{\text{ref}})$$

Where:

L_v = velocity level in decibels (VdB)
 v = RMS velocity amplitude = PPV/Crest Factor
 v_{ref} = reference velocity amplitude (1×10^{-6})

Crest Factor is defined as the ratio of the PPV amplitude to the RMS velocity amplitude. To calculate the RMS velocity amplitude, a crest factor of 4 for random ground vibration was used.

$$\text{RMS velocity amplitude} = \text{PPV/Crest Factor} = 0.0002/4 = 0.00005$$

The vibration velocity level for the proposed project site is calculated below:

$$L_v = 20 \times \log_{10}(0.00005/1 \times 10^{-6}) = \mathbf{34 \text{ VdB}}$$

The calculated vibration velocity at the nearest residence is less than the threshold of human perception at 65 VdB (Table 3.5.13.3-5). Therefore, the estimated ground-borne vibration generated by the proposed project would have a less than significant impact with exposing excessive noise and vibration to persons.

- c) *Would the project have a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?***

The site preparation, drilling, completion and testing, installation of production equipment and plugging and abandonment phases of the proposed project are short term and temporary in nature; accordingly, these activities would not increase the permanent ambient noise levels in the project vicinity. However, long-term noise impacts associated with the production phase of the proposed project would continue through the life of the well. On August 7, 2019, Booher Consulting, LLC measured ambient noise levels ranging from 33.0 dB to 40 dBA within the vicinity of the proposed project site. The ambient sound level of 33.0 dB was measured at the nearest residence to the proposed project site. The ambient sound level of 40.0 dB was measured at the proposed project site. Assuming the proposed well is placed into production, the ambient noise level at the proposed project site would be 10.4 dB. The noise level at the proposed project site during production is below the range of the ambient noise levels that were measured in the project vicinity. The proposed project would not have a substantial increase in the permanent ambient noise levels in the project vicinity. Therefore, the proposed project would have a less than significant impact on ambient noise levels.

- d) *Would the project have a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?***

As previously discussed, ambient noise levels range from 33.0 dB to 40 dB were measured within the vicinity of the proposed project site. During the site preparation, drilling, completion and testing, installation of production equipment and plugging and abandonment phases of the proposed project, which are short-term and temporary in nature, the maximum sound level would be 87 dB at the proposed project site. Even though ambient sound levels would increase due to attenuation, the ambient noise level at the nearest residence would be a maximum of 46.4 dB during these project activities, which does not represent a substantial temporary or periodic increase. Accordingly, impacts would be less than significant.

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

The proposed project site is not located within an airport land use plan or within two (2) miles of a public airport or public use airport. Therefore, the project would not expose people residing or working in the project area to excessive noise levels. No impact.

- f) *For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?***

The proposed project site is not located within the vicinity of a private airstrip. Therefore, the proposed project would not expose people residing in or working in the project area to excessive noise levels. No impact.

3.5.13.4 Mitigation Measures

No significant impacts identified. No mitigation necessary.

3.5.13.5 References

“A Survey of Traffic-Induced Vibrations” by Whiffen and Leonard, Transport and Road Research Laboratory, RRL Report LR418, Crowthorne, Barkshire, England, 1971.(Included in Report prepared by California Department of Transportation. *Transportation Related Earthborne Vibrations, Technical Advisory, Vibration, TAV-02-01-R9601*. Page 11. February 2002).

California Department of Transportation, Noise, Vibration, and Hazardous Waste Management Office. 2004. *Transportation and Construction Induced Vibration Guidance Manual*. Prepared by Jones & Stokes, Sacramento, CA.

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online: <http://generalplan.co.tulare.ca.us/>

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The Governor’s Office of Planning and Research. 1998. State of California Community Noise Exposure Guidelines. Sacramento, CA.

U.S. Environmental Protection Agency. 1974. *Noise Control for Building and Manufacturing Plants*. BBN Layman Miller Lecture Notes. 1987.

U.S. Department of Transportation, Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. FTA-VA-90-1003-06.

U.S. Department of Transportation, Surface Transportation Board. 2009. *Northern Rail Extension Final Environmental Impact Statement, Appendix J – Noise and Vibration, for STB Finance Docket No. 35468, Alaska Railroad Corporation – Petition for Exemption – To Construct and Operate a Rail Line Between North Pole, Alaska and Delta Junction, Alaska*.

SECTION 3.5.14 – Population and Housing

ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
POPULATION AND HOUSING <i>Would the project:</i>				
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure?)	_____	_____	_____	X
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	_____	_____	_____	X
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	_____	_____	_____	X

3.5.14.1 Environmental Setting

The proposed project site is situated within unincorporated area of Tulare County. The proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. Uses of project area lands consist primarily of almond, cherry and vineyard production and some oil and gas exploration and production activities. The nearest residential structure is located 1.01-mile northwest of the proposed project site.

3.5.14.2 Regulatory Setting

Federal

No federal laws or regulations related to population and housing is applicable to the project.

State

The California Housing Element Law, enacted in 1969, is implemented by the California Department of Housing and Community Development (HCD), one of 13 departments within the California Business, Consumer Services, and Housing Agency. The HCD is responsible for housing codes and standards, housing policy, and the administration of housing related loans and grants. The HCD reviews local government housing elements for compliance with state law and

provides written comments to the local government. Using the information provided by local government in its housing element, the HCD determines the regional housing need for each county and allocates funding to meet this need to the council of governments for distribution to its jurisdictions. The HCD also oversees distribution of the regional housing need by the council of governments to the local governments to ensure that funds are appropriately allocated.

Local

Tulare County Housing Element

Tulare County is composed of eight incorporated cities and numerous unincorporated communities and hamlets. Most of the unincorporated communities and hamlets are located on the Valley floor. The 2009 Update of the Tulare County Housing Element is a comprehensive assessment of current and future housing needs for all segments of the County's population living in unincorporated areas, as well as a program for meeting those needs. It serves as a policy guide to address issues related to the provision of adequate and affordable housing, as well as the comprehensive housing needs of the unincorporated areas of Tulare County during the 2009 to 2014 planning period and beyond. According to the 2009 Update, the purpose of the Housing Element is to:

- Determine the existing and projected housing needs of residents of the unincorporated areas.
- Establish goals, objectives, policies, and programs that guide decision-making to address housing needs; and
- Implement actions that encourage the private sector to build housing, while ensuring that governmental policies do not serve as a constraint to housing production.

A major constraint to development of affordable housing throughout Tulare County is the lack of sufficient infrastructure such as domestic water, wastewater, storm drainage, and streetlights. Government Code Section 65583(a)(3) requires local governments to prepare an inventory of land suitable for residential development, including vacant sites and sites having the potential for redevelopment, and an analysis of the relationship of zoning and public facilities and services to these sites. This inventory is designed to be used to identify sites that can be developed for housing within the planning period of the Housing Element. The purpose of this report is to document the existing infrastructure provided in the disadvantaged unincorporated communities and hamlets.

3.5.14.3 Impact Analysis

- a) Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure?)***

KEBO project personnel, drilling company employees and other support personnel currently reside within Bakersfield. Activities at the proposed project site would primarily be handled by the local employees in the Bakersfield area. Accordingly, the proposed project would not

induce population growth in the project area. No impact.

b) Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

The proposed project does not propose to displace any existing housing. No impact.

c) Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The project does not propose any action that would directly or indirectly displace or relocate people. No impact.

3.5.14.4 Mitigation Measures

No impacts identified. No mitigation necessary.

3.5.14.5 References

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online:
<http://generalplan.co.tulare.ca.us/>

SECTION 3.5.15 – Public Services

ISSUES	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
PUBLIC SERVICES Would the project: a. result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	_____	_____	_____	X
Police protection?	_____	_____	_____	X
Schools?	_____	_____	_____	X
Parks?	_____	_____	_____	X
Other public facilities?	_____	_____	_____	X

3.5.15.1 Environmental Setting

The proposed project site is located on private lands in unincorporated Tulare County.

The Tulare County Sheriff's Department provides law enforcement services in the project area. The main office is located at 161 N. Pine Street, Pixley, CA 93256, approximately 12.3 miles to the northwest of the proposed project site. The nearest fire protection resource is the Tulare County Fire Department Station 10, 20890 Grove Drive, Richgrove, CA 93261 located approximately 4.0 miles south of the proposed project site. No cities, schools, parks, or other public facilities are located in the general vicinity of the proposed project site. No existing or proposed schools are located within one-quarter mile of the proposed project site. The nearest school, Richgrove School District at 20898 Grove Drive, Richgrove, California is approximately 4.1 miles south of the proposed project site. The proposed project site is not located within two (2) miles of a public airport, public use airport, or private airstrip. The nearest public airport is the Delano Public Airport at 1212 Airport Drive, Delano, CA 93215 located 9.14 miles southwest of the proposed project site.

3.5.15.2 Regulatory Setting

Federal

No federal laws or regulations related to public services are applicable to the project.

State

California Occupational Safety and Health Administration

In accordance with California Code of Regulations (CCR), Title 8, Sections 1270 “Fire Prevention” and 6773 “Fire Protection and Fire Equipment,” California Occupational Safety and Health Administration (Cal/OSHA) has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hosing sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance and use of all firefighting and emergency medical equipment.

Jurisdictional Emergency Response/Evacuation Plans

The State of California has passed legislation authorizing the Office of Emergency Services (OES) to prepare a Standardized Emergency Management System (SEMS) program, which sets forth measures by which a jurisdiction should handle emergency disasters. Non-compliance with SEMS could result in the State withholding disaster relief from the non-complying jurisdiction in the event of an emergency disaster. The Tulare County Fire Department has implemented an Emergency Operations Plan, which establishes an emergency management organization and assigns functions and tasks consistent with SEMS requirements.

California Fire Code

The California Fire Code (CFC) contains the International Fire Code with amendments specific to California and is adopted by the State. The CFC contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the code include fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, and provisions intended to protect and assist fire responders, industrial processes.

Local

Tulare County General Plan

Concept 2: Public Facilities & Services

Long-range planning anticipates the improvement and development of public facilities in urbanized areas of the County. Communities and hamlets will have more opportunity to grow and develop with added water, wastewater, and drainage capacity while the safety of County

residents and property will be ensured through the placement and services of adequate law enforcement and fire safety facilities.

Goals and Policies – 10.1 General

HS-1

To protect residents and visitors from injury and damage resulting from natural catastrophes, man-made events, and hazardous conditions.

HS-1.1 Maintain Emergency Public Services

The County shall ensure that during natural catastrophes and emergency situations, the County can continue to provide essential emergency services.

HS-1.2 Development Constraints

The County shall permit development only in areas where the potential danger to the health and safety of people and property can be mitigated to an acceptable level.

HS-1.9 Emergency Access

The County shall require, where feasible, road networks (public and private) to provide for safe and ready access for emergency equipment and provide alternate routes for evacuation.

PFS-7.1 Fire Protection

The County shall strive to expand fire protection service in areas that experience growth in order to maintain adequate levels of service.

PFS-7.2 Fire Protection Standards

The County shall require all new development to be adequately served by water supplies, storage, and conveyance facilities supplying adequate volume, pressure, and capacity for fire protection.

3.5.15.3 Impact Analysis

- a) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, schools, parks and other public facilities?*

The proposed project would not generate physical changes associated with the provision of new or physically altered government facilities. The proposed project would not have any impact on existing service ratios or response times or performance of any public service. No impact.

3.5.15.4 Mitigation Measures

No impact identified. No mitigation necessary.

3.5.15.5 References

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online:
<http://generalplan.co.tulare.ca.us/>

SECTION 3.5.16 – Recreation

ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
RECREATION <i>Would the project:</i>				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	_____	_____	_____	X

3.5.16.1 Environmental Setting

The proposed project site is situated within unincorporated area of Tulare County. The proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. Uses of project area lands consist primarily of almond, cherry and vineyard production and some oil and gas exploration and production activities. This land does not provide recreational activities to the public.

3.5.16.2 Regulatory Setting

Federal

No federal laws or regulations related to recreation are applicable to the project.

State

No state laws or regulations related to recreation are applicable to the project.

Local

Tulare County General Plan

Environmental Resource Management – Chapter 8.5 Recreation and Open Space Resources

ERM-5

To provide parks, recreation, and open space system that serves the recreational needs of County residents and visitors, with special emphasis on recreation related to Environmental Resources Management.

3.5.16.3 Impact Analysis

- a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*

There are no recreational facilities within the project area. The proposed project would not create increased use of existing parks or recreational facilities that would cause physical deterioration. No impact.

3.5.16.4 Mitigation Measures

No impact identified. No mitigation necessary.

3.5.16.5 References

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online:
<http://generalplan.co.tulare.ca.us/>

SECTION 3.5.17 – Transportation/Traffic

ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
TRANSPORTATION/TRAFFIC <i>Would the project:</i>				
a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e. result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections?	_____	_____	X	_____
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	_____	_____	X	_____
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	_____	_____	_____	X
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	_____	_____	_____	X
e. Result in inadequate emergency access?	_____	_____	_____	X
f. Result in inadequate parking capacity?	_____	_____	_____	X
g. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	_____	_____	_____	X

3.5.17.1 Environmental Setting

Vehicle access to the proposed project site would be primarily via existing access roads (Avenue 40 and Highway 99). The proposed project site can be accessed from the intersection of Highway 99 and Garces Highway 155, then travel east on Garces Highway 155 for 6.5 miles, travel north on Famoso Porterville Highway for 3.36 miles, travel west on Avenue 8 in the community of Richgrove for approximately 0.1 mile, then travel north on Road 208 for 4.0 miles, travel west on Avenue 40 for 0.5 mile and then south on an existing farm access road to the proposed project

site.

Booher Consulting, LLC reviewed the most recent available (2017) traffic counts collected by Caltrans on Highway 99 and Avenue 24, which is the nearest traffic count location to the proposed project site. According to Caltrans, the 2017 AADT for at this intersection is 53,000 vehicles.

3.5.17.2 Regulatory Setting

Federal

No Federal regulations pertain to the proposed project.

State

California Department of Transportation

Traffic analysis in California is guided by policies and standards set by local jurisdictions and by the California Department of Transportation (Caltrans). Caltrans, which has jurisdiction over State highways, sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on State highways. The Caltrans regulations below apply to the potential transportation and traffic impacts of the proposed project.

- *California Vehicle Code, Division 15, Chapters 1 through 5 (Size, Weight, and Load)* – Include regulations pertaining to licensing as well as the size, weight, and load of vehicles that operate on State highways.
- *California Street and Highway Code Sections 660-711* – Require permits from Caltrans for any roadway encroachment. The sections also include regulations pertaining to the care and protection of State and County highways and provisions for the issuance of written permits, which are required when a load exceeds Caltrans' weight, length, or width standards for public roadways and State highways.
- *Caltrans Highway Design Manual (2006), Section 100-2, Topic 102* – Highway Capacity identifies a LOS standard of C to D for rural, two-lane highways with a corresponding design year peak hour traffic volume (average vehicles per lane per hour) of 1,000 to 1,200 vehicles.

Local

Tulare County General Plan

The policies, goals, and implementation measures in the Tulare County General Plan for transportation applicable to the proposed project are provided below.

13. Transportation and Circulation

13.1 Roadways and Highways

Roadway Functional Classification System

Roadways serve two necessary but conflicting functions: mobility and property access. High and constant speeds, with few interruptions and limited conflicting traffic, are desirable for mobility. A functional classification system provides for specialization in meeting the access and mobility requirements of the development permitted under the General Plan. Local streets emphasize property access; freeways, and arterials emphasize high mobility for through-traffic; and collectors attempt to achieve a balance between both functions. An efficient transportation system is an important component of a strong and dynamic economy. Access control is the greatest single correlative to traffic safety and regional mobility. Good access management practices will ensure that the transportation system will continue to serve the needs of Tulare County and the regional economy far into the future by insuring safe, efficient, and convenient mobility. The Circulation Diagram represents the official functional classification of existing and proposed streets, roadways, and highways in Tulare County (see Figure 13.1: Tulare County Road System). This diagram depicts the State highways, arterial, and collector roadway system in Tulare County. All other roadways are classified as local streets. The County's functional classification system recognizes differences in roadway functions and standards between urban/suburban areas and rural areas. The following paragraphs define the linkage and functions provided by each class of roadways. Furthermore, streets and highways as written in the County's Ordinance Code is represented by all classifications.

Freeways provide for the ability to carry large traffic volumes at high speeds for long distances. Access points are fully controlled. Freeways connect points within the County and link the County to other parts of the State.

Arterials provide for mobility within the County and its cities, carrying through traffic on continuous routes and joining major traffic generators, freeways, and other arterials. Access to abutting private property and intersecting local streets shall generally be restricted.

Collectors provide for internal traffic movement within communities, and connect local roads to arterials. Direct access to abutting private property shall generally be permitted.

Local Roads provide direct access to abutting property and connect with other local roads, collectors, and arterials. Local roads are typically developed as two-lane undivided roadways. Access to abutting private property and intersecting streets shall be permitted.

TC-1

To promote an efficient roadway and highway system for the movement of people and goods, which enhances the physical, economic, and social environment while being safe, environmentally friendly, and cost-effective.

TC-1.15 Traffic Impact Study

The County shall require an analysis of traffic impacts for land development projects that

may generate increased traffic on County roads. Typically, applicants of projects generating over 100 peak hour trips per day or where LOS “D” or worse occurs, will be required to prepare and submit this study. The traffic impact study will include impacts from all vehicles, including truck traffic.

3.5.17.3 Impact Analysis

- a) *Would the project cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e. result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections?*

As shown in Table 3.5.17.3-1, the maximum number of project related daily vehicle trips would be 64 round trips during the mobilization/ demobilization of drilling equipment on and off site during the drilling phase of the well. The 64 vehicle round trips would consist of 59 heavy truck/semi round trips and five (5) car/pickup truck round trips.

**Table 3.5.17.3-1
Maximum Daily Round Trips**

Vehicle Type / Number	Round Trips Per Well
Worker Transport – Light Truck/Passenger Cars	5
Heavy Duty Trucks/Semi - Mobilization and Demobilization of Equipment	56
Heavy Duty Trucks Semi – Vacuum Trucks	2
Heavy Duty Trucks Semi – Normal Operations	1
Total Trips	64

As previously stated, Booher Consulting, LLC reviewed traffic counts collected by Caltrans at the intersection of Highway 99 and Avenue 24 to quantify the average annual daily traffic (AADT) levels. According to Caltrans, the 2017 AADT at this intersection is 53,000 vehicles.

The proposed project would contribute a maximum of 64 additional round trip daily vehicle trips during the drilling phase. As such, the proposed project increases the roadway traffic at Highway 99 and Avenue 48 a maximum of 0.12% (64/53,000) during the drilling phase for the proposed project. Since the 0.12% maximum daily increase of vehicle traffic on Highway 99 and Avenue 24 would occur over a period of two (2) and a half day, the drilling phase related vehicle traffic would not represent a significant impact to road network.

The total number of daily round trips that would be made during the production phase of the proposed project would be three (3). The production phase would be the longest phase of the proposed project. The three (3) vehicle round trips would include one (1) heavy truck/semi round trip (oil transportation), one (1) operator pickup truck round trip and one (1) pickup

truck for the work-over rig.

Table 3.5.17.3-2
Maximum Daily Vehicle Trip Generation during the
Production Phase

Vehicle Type / Number	Round trip Trips
Heavy Truck/Semi - Oil Transportation	1
Operator Pickup Truck	1
Pickup Truck for the Work-over Rig	1
Maximum Total Daily Trips	3

The project would contribute a maximum of 3 daily round trips during the production phase of the proposed project. As a result, the proposed project would increase the traffic at Highway 99 and Avenue 48 by 0.006% (3/53,000) during the production phase. With a daily increase of 0.006% on Highway 99 and Avenue 24, the proposed project would have a less than significant impact on vehicle traffic on roadways during the production phase of the proposed project.

- b) Would the project exceed, either individually or cumulatively a level of service standard established by the county congestion management agency for designated roads of highways?***

The Tulare County Transportation and Circulation Element of the Tulare County General Plan has developed and managed its roadway system (both segments and intersections) to meet a LOS of “D” or better in accordance with the LOS definitions below.

Table 13.1 Uninterrupted Traffic Flow Facilities LOS

LOS A	Represents free flow. Individual vehicles are virtually unaffected by the presence of others in the traffic stream.
LOS B	Is in the range of stable flow, but the presence of other vehicles in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.
LOS C	Is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual vehicles becomes significantly affected by interaction with others vehicles in the traffic stream.
LOS D	Is a crowded segment of roadway with a large number of vehicles restricting mobility and stable flow. Speed and freedom to maneuver are severely restricted and the driver experiences a generally poor level of comfort and convenience.
LOS E	Represents operating conditions at or near level capacity. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.
LOS F	Is used to define forced or breakdown flow (stop and go gridlock). This condition exists wherever the amount of traffic approaches a point where the amount of traffic exceeds the amount that can travel to a destination. Operations within queues are characterized by stop-and-go waves and they are extremely unstable.

Source: 2004/05 Regional Transportation Plan, Tulare County Association of Governments

Table 13.2 Interrupted Traffic Flow Facilities LOS

LOS A	Describes operations with average intersection stopped delay of ten seconds or less (how long a driver must wait at a signal before the vehicle can begin moving again).
LOS B	Describes operations with average intersection stopped delay in the range of 10.0 to 20.0 seconds per vehicle and with reasonably unimpeded operations between intersections.
LOS C	Describes operations with higher average stop delays at intersections (in the range of 20.0 to 35.0 seconds per vehicle). Stable operations between locations may be more restricted due to the ability to maneuver and change lanes at mid-block locations can be more restrictive than LOS B. Further, longer queues and/or adverse signal coordination may contribute to lower average speeds.
LOS D	Describes operations where the influence of delay is more noticeable (35.0 to 55.0 seconds per vehicle). Intersection stopped delay is longer and the range of travel speeds are about 40 percent below free flow speed. This is caused by inappropriate signal timing, high volumes, and some combinations of these.
LOS E	Is characterized by significant approach stopped delay (55.0 to 80.0 seconds per vehicle) and average travel speeds of one-third the free flow speed or lower. These conditions are generally considered to represent the capacity of the intersection or arterial.
LOS F	Is characterized arterial flow at extremely low speeds with high intersection stopped delay (greater than 80.0 seconds per vehicle). Poor progression, long cycles lengths, and high traffic demand volumes may be major contributing factor to this condition. Traffic may be characterized by frequent stop-and-go conditions.

Source: 2004/05 Regional Transportation Plan, Tulare County Association of Governments

As discussed in response to question 3.5.17.3 (a), the proposed project would add a maximum of 64 vehicle round trips during the mobilization and demobilization of drilling equipment for a well and add 3 operations related trips daily for the life of the project. The Tulare County General Plan or Tulare County Association of Government (TCAG) did not identify Highway 99's current LOS status or that it is operating at LOS E or F (below the requirement of LOS D mentioned in the Tulare County General Plan). The increase of 0.12% (64 round trips) over the 2017 AADT of 53,000 in construction related traffic trips for the short-term would have a less than significant impact to roadway capacity. Production operations (long term) would increase traffic 0.006% (3 round trips) over the 2017 AADT of 53,000 and would have a less than significant impact to roadway capacity during project operations. These increases in traffic are unlikely to result in exceedances of the LOS standard set for Highway 99.

As a result, the proposed project would have a less than significant impact on the LOS of a designated roadway (Highway 99), since it would not lead to an increase in traffic that would

exceed LOS standards established by the Tulare County General Plan or Tulare County Association of Government.

- c) *Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?***

The proposed project would not have any impact on air traffic patterns. The nearest public airport is the Delano Public Airport at 1212 Airport Drive, Delano, CA 93215 located 9.14 miles southwest of the proposed project site. The drill rig for the proposed project would be less than 70-feet tall above ground level and would be located more than 10,000 feet from an airport with a runway of 3,200 feet in length. Finally, the project area is not located in an airport influence area. No impact.

- d) *Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?***

No public roads would be constructed or improved as part of the proposed project. Therefore, the project is not expected to cause any hazards due to a design feature or incompatible uses of a roadway. No impact.

- e) *Would the project result in inadequate emergency access?***

The proposed project activities would not change existing emergency access. No impact.

- f) *Would the project result in inadequate parking capacity?***

The proposed project site would have adequate parking for workers and equipment required to drill and produce the well. The proposed project would not use any public parking and would not result in inadequate parking capacity. No impact.

- g) *Would the project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?***

Drilling and producing an oil well would not affect pedestrian or bicycle circulation as no public roadways would be added, altered, or improved during project activities. The proposed project site would have restricted access; accordingly, bicyclists and pedestrians would not have direct access to the proposed project site. Additionally, the proposed project is in a remote area, where pedestrians and bicyclists are not common. No impact.

3.5.17.4 Mitigation Measures

No significant impacts identified. No mitigation necessary.

3.5.17.5 References

California Department of Transportation, Traffic Data Branch. Traffic Volumes 2017 AADT. Accessed in 2019.

Website: <https://dot.ca.gov/programs/traffic-operations/census/traffic-volumes/2017/route-99>

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online:

<http://generalplan.co.tulare.ca.us/>

SECTION 3.5.18 – Tribal Cultural Resources

ISSUES	Potentially Significant Impact		Less Than Significant with Mitigation Incorporated		Less Than Significant Impact		No Impact
TRIBAL CULTURALL RESOURCES <i>Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe that is</i>							
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?	_____		_____		_____		X
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	_____		_____		_____		X

3.5.18.1 Environmental Setting

The proposed project is located between 451 and 458-ft elevation on the open flats of the San Joaquin Valley, north of Richmond. The study area is situated immediately north of the channelized White River, which itself is roughly 0.25-mi north of the original river course. This river flows entirely within the county of Tulare and is diverted into irrigation canals and ditches near the Kern and Tulare County lines.

Prior to the appearance of agriculture, starting in the nineteenth century, this location would have been prairie grasslands, grading into tree savannas in the foothills to the east (Preston 1981). Historically, and likely prehistorically, riparian environments would have been present along the drainages, waterways, and marshes. The study area and immediate surroundings have been farmed and grazed for many years and no native vegetation is present. The White River Pit Landfill was created in the study area circa 1963, further disturbing this location. Perennial

bunchgrasses such as purple needlegrass and nodding needlegrass most likely would have been the dominant plant cover in the study area prior to cultivation.

The study area falls within the White River Fan. According to the geoarchaeological model developed by Meyer et al. (2010), the study area has a very low potential for buried archaeological deposits, especially given that it has been highly disturbed by grading and dumping. Buried sites and cultural resources are therefore considered to be unlikely within the Project study area.

Records Search Results

On July 22, 2019, an archival records search was conducted at the California State University, Bakersfield, Southern San Joaquin Valley Archaeological Information Center (AIC), by IC staff to determine: (i) if prehistoric or historical archaeological sites had previously been recorded within the project study area; (ii) if the project area had been systematically surveyed by archaeologists prior to the initiation of this field study; and/or (iii) whether the region of the field project was known to contain archaeological sites and to thereby be archaeologically sensitive. The records search indicated that no cultural resources had been previously recorded within the study area or within a half-mile radius of it. Only one previous study had occurred within a half-mile radius (IC report # TU-1465), with negative results. Based on the records search results, the study area appeared to have low archaeological and cultural resources sensitivity.

Native American Consultation

The Native American Heritage Commission (NAHC) maintains a contact list of Native American Tribes as having traditional lands located within the County's jurisdiction. A search of the Sacred Lands Inventory on file with the Native American Heritage Commission (NAHC) was also requested and resulted in negative results (i.e., no sacred lands were identified in the Project site) in a letter received from the NAHC on August 13, 2019 (see Attachment "D"). ASM Affiliates then communicated via certified letters and emails to the potentially interested parties on August 13, 2019 and followed up with an email on September 11, 2019. To date, no responses were received from any of the tribes. Additionally, pursuant to AB 52 Tulare County RMA staff contacted fourteen (14) Native American Tribes (see Attachment "D") by email on May 15, 2020 with RMA's request as Lead Agency. RMA staff also sent a follow up email to all fourteen (14) tribal representatives offering another chance to consult with the County. The County did not receive any response from any of the Tribes.

3.5.18.2 Regulatory Setting

Federal

The National Historic Preservation Act

The National Historic Preservation Act of 1966 (NHPA) established federal regulations for the purpose of protecting significant cultural resources. The legislation established the National Register of Historic Places and the National Historic Landmarks Program. It mandated the

establishment of the State Historic Preservation Office (SHPO), responsible for implementing statewide historic preservation programs in each state. A key aspect of SHPO responsibilities include surveying, evaluating, and nominating significant historic buildings, sites, structures, districts, and objects to the National Register. The NHPA also established requirements for federal agencies to consider the effects of proposed federal Projects on historic properties (Section 106, NHPA). Federal agencies and recipients of federal funding are required to initiate consultation with the State Historic Preservation Officer (SHPO) as part of the Section 106 review process.

State

California State Office of Historic Preservation (OHP)

The California State Office of Historic Preservation (OHP) is responsible for administering federally and state mandated historic preservation programs to further the identification, evaluation, registration and protection of California's irreplaceable archaeological and historical resources under the direction of the State Historic Preservation Officer (SHPO), a gubernatorial appointee, and the State Historical Resources Commission.

OHP's responsibilities include identifying, evaluating, and registering historic properties; ensuring compliance with federal and state regulatory obligations; encouraging the adoption of economic incentives programs designed to benefit property owners; encouraging economic revitalization by promoting a historic preservation ethic through preservation education and public awareness and, most significantly, by demonstrating leadership and stewardship for historic preservation in California.

A historical resource may be eligible for inclusion in the California Register of Historical Resources (CRHR) if it:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Is associated with the lives of persons important to our past.
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded, or may be likely to yield, information important in prehistory or history.

Native American Heritage Commission

The Native American Heritage Commission (NAHC), created in statute in 1976, is a nine-member body, appointed by the Governor, to identify and catalog cultural resources (i.e., places of special religious or social significance to Native Americans, and known graves and cemeteries of Native Americans on private lands) in California. The Commission is charged with the duty of preserving and ensuring accessibility of sacred sites and burials, the disposition of Native American human remains and burial items, maintain an inventory of Native American sacred sites located on public lands, and review current administrative and statutory protections related to these sacred sites.

Tribal Consultation Requirements: AB 52 (Gatto, 2014)

The Public Resources Code has established that “[a] project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.” (Pub. Resources Code, § 21084.2.) To help determine whether a project may have such an effect, the Public Resources Code requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. That consultation must take place prior to the release of a negative declaration, mitigated negative declaration, or environmental impact report for a project. (Pub. Resources Code, § 21080.3.1.) If a lead agency determines that a project may cause a substantial adverse change to tribal cultural resources, the lead agency must consider measures to mitigate that impact.

CEQA Guidelines: Archaeological Resources

Section 15064.5(c) of CEQA Guidelines provides specific guidance on the treatment of archaeological resources as noted below.

- (1) When a Project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subdivision (a).
- (2) If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, and this section, Section 15126.4 of the Guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.
- (3) If an archaeological site does not meet the criteria defined in subdivision (a), but does meet the definition of a unique archeological resource in Section 21083.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of section 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c–f) do not apply to surveys and site evaluation activities intended to determine whether the Project location contains unique archaeological resources.
- (4) If an archaeological resource is neither a unique archaeological nor an historical resource, the effects of the Project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or EIR, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

CEQA Guidelines: Human Remains

Public Resources Code Sections 5097.94 and 5097.98 provide guidance on the disposition of Native American burials (human remains), and fall within the jurisdiction of the Native American Heritage Commission:

(d) When an initial study identifies the existence of, or the probable likelihood, of Native American human remains within the Project, a lead agency shall work with the appropriate Native Americans as identified by the Native American Heritage Commission as provided in Public Resources Code Section 5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains, and any Items associated with Native American burials with the appropriate Native Americans as identified by the Native American Heritage Commission. Action implementing such an agreement is exempt from:

(1) The general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5).

(2) The requirements of CEQA and the Coastal Act.

(e) In the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps should be taken:

(1) There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

(A) The coroner of the county in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required, and

(B) If the coroner determines the remains to be Native American:

1. The coroner shall contact the Native American Heritage Commission within 24 hours.

2. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American.

3. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98, or

(2) Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance.

(A) The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 24 hours after being notified by the commission.

(B) The descendant identified fails to make a recommendation; or

(C) The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.

(f) As part of the objectives, criteria, and procedures required by Section 21082 of the Public Resources Code, a lead agency should make provisions for historical or unique archaeological resources accidentally discovered during construction. These provisions should include an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, contingency funding, and a time allotment sufficient

to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place.

Local

Tulare County General Plan 2030 Update

The General Plan has a number of policies that apply to Projects within Tulare County. General Plan policies that relate to the proposed Project are listed as follows:

The following Tulare County General Plan 2030 Update policies for this resource apply to this Project: *ERM-6.1 Evaluation of Cultural and Archaeological Resources* wherein the County shall participate in and support efforts to identify its significant cultural and archaeological resources using appropriate State and Federal standards; *ERM-6.2 Protection of Resources with Potential State or Federal Designations* wherein the County shall protect cultural and archaeological sites with demonstrated potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation's California Points of Interest and California Inventory of Historic Resources; *ERM-6.3 Alteration of Sites with Identified Cultural Resources* which states that when planning any development or alteration of a site with identified cultural or archaeological resources, consideration should be given to ways of protecting the resources. Development can be permitted in these areas only after a site specific investigation has been conducted pursuant to CEQA to define the extent and value of resource, and Mitigation Measures proposed for any impacts the development may have on the resource; *ERM-6.4 Mitigation* which states that if preservation of cultural resources is not feasible, every effort shall be made to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation and archival of records; *ERM-6.9 Confidentiality of Archaeological Sites* wherein the County shall, within its power, maintain confidentiality regarding the locations of archaeological sites in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts; and *ERM-6.10 Grading Cultural Resources Sites* wherein the County shall ensure all grading activities conform to the County's Grading Ordinance and California Code of Regulations, Title 20, § 2501 et. seq.

As noted earlier, the proposed project site is situated within unincorporated area of Tulare County. The proposed project site is located in a previously disturbed non-native grassland area, formerly the Richgrove Landfill and is surrounded by almond orchards to the south and east, cherries to the north and vineyards to the west. The past and current use of the proposed project site have continually been disturbed to the point that there is no evident surface Tribal cultural resources. However, as discussed below, mitigation measures are included in the unlikely event that Tribal cultural resources are encountered.

3.5.18.3 Impact Analysis

a) and b) Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe that is Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k) or listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

As noted earlier, a search of records by the California State University, Bakersfield, Southern San Joaquin Valley Archaeological Information Center (AIC) identified no cultural resources had been previously recorded within the study area or within a half-mile radius of it. Only one previous study had occurred within a half-mile radius (IC report # TU-1465), with negative results. The Native American Heritage Commission (NAHC) conducted a search of the Sacred Lands Inventory on file with the Native American Heritage Commission (NAHC) which concluded negative results (i.e., no sacred lands were identified in the Project site). Lastly, fourteen (14) Native American Tribes were notified consistent with AB 52 requirements; no responses were received. Therefore, the Project would not result in any impacts to Tribal Cultural Resources.

3.5.18.4 Mitigation Measures

No impact identified. No mitigation necessary.

3.5.18.5 References

ASM Affiliates. 2019. *Phase 1 Archaeological Survey, KEBO CRPC et. al. #B-1 Well Pad, Tulare County, California*. November 2019.

Advisory Council on Historic Preservation. The National Historic Preservation Program. Accessed September 2020. Website: <http://www.achp.gov/overview>

Office of Historic Preservation. Mission and Responsibilities., Accessed in September 2020. Website: ohp.parks.ca.gov/?page_id=1066

Office of Historic Preservation. California Register of Historic Places. Accessed in September 2020. Website: http://www.ohp.parks.ca.gov/?page_id=21238

Native American Heritage Commission. Welcome. Accessed in September 2020. Website: <http://nahc.ca.gov/>

Office of Planning and Research. Discussion Draft Technical Advisory: AB 52 and Tribal Cultural Resources in CEQA (May 2015). Page 3. Accessed in September 2020. Website: http://opr.ca.gov/docs/DRAFT_AB_52_Technical_Advisory.pdf

California Natural Resources Agency. 15064.5. Determining the Significance of Impacts to Archeological and Historical Resources, Section 15064.5 (c). Accessed in September 2020. Website: <http://resources.ca.gov/ceqa/guidelines/art5.html>

SECTION 3.5.19 – Utilities and Service Systems

ISSUES	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
UTILITY AND SERVICE SYSTEMS <i>Would the project:</i>				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	_____	_____	_____	X
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	_____	_____	_____	X
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	_____	_____	_____	X
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or new or expended entitlements needed?	_____	_____	_____	X
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	_____	_____	_____	X
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	_____	_____	_____	X

3.5.19.1 Environmental Setting

There is no existing storm water drainage, wastewater treatment, or landfill anymore that serves the proposed project site. Water requirements for the proposed project would be served by a local farmer located east of the proposed project site. No utility or service systems expansion would be required to support the drilling or operation of the well, or other aspects of the proposed project.

3.5.19.2 Regulatory Setting

Federal

National Pollutant Discharge Elimination System

Discharge of treated wastewater to surface water(s) of the U.S., including wetlands, requires a National Pollution Discharge Elimination System (NPDES) permit. In California, the nine Regional Water Quality Control Boards (RWQCBs) administers the issuance of these federal permits. Obtaining a NPDES permit requires preparation of detailed information, including characterization of wastewater sources, treatment processes, and effluent quality. Any proposed development that exceeds one (1) acre in size is required to comply with NPDES criteria, including preparation of a Stormwater Pollution Prevention Plan (SWPPP) and the inclusion of Best Management Practices (BMPs) to control erosion and offsite transport of soils.

State

California Water Resources Control Board

The NPDES was established per the 1972 amendments to the Federal Water Pollution Control Act, or Clean Water Act (CWA), to control discharges of pollutants from point sources (Section 402). Amendments to the CWA created a new section to the act, which is devoted to stormwater permitting (Section 402[p]), with individual states designated for administration and enforcement of the provisions of the CWA and the NPDES permit program. The SWRCB issues both general construction permits and individual permits under this program.

Central Valley Regional Water Quality Control Board

The primary responsibility for the protection of water quality in California rests with the State Water Resources Control Board (SWRCB) and nine RWQCBs. The SWRCB sets statewide policy for the implementation of State and Federal laws and regulations. The RWQCBs adopt and implement Water Quality Control Plans (Basin Plans) that recognize regional differences in natural water quality, actual and potential beneficial uses, and water quality problems associated with human activities. The jurisdiction of the Central Valley RWQCB extends from the Oregon border, over the valley and foothills from Redding to Fresno, through the Central Valley, to the border with Los Angeles County, and includes the proposed project site. The CVRWQCB has jurisdiction over wastewater treatment and storm water quality and facilities.

California Water Code Section 13260

California Water Code Section 13260 requires any person who discharges waste, other than into a community sewer system, or proposes to discharge waste that could affect the quality of waters of the State to submit a report of waste discharge to the applicable RWQCB. Any actions of the proposed project that would be applicable under California Water Code Section 13260 would be reported to the Central Valley RWQCB (i.e., any accidental discharges of sediment or hazardous materials that could cause long-term loss of a beneficial use, such as drinking water supply,

aquatic habitat, discharges that could impair the designated beneficial uses, cause short-term violations of water quality objectives, violate secondary drinking water standards, degrade water quality without violating objectives or could cause minor impairment of beneficial uses).

Senate Bill 610

Senate Bill (SB) 610 amended California Water Code Sections 10910 and 10912 to create a direct relationship between water supply and land use. In general terms, prior to constructing developments with more than 500 homes or the commercial/industrial equivalent, SB 610 requires applicants to demonstrate that there is an adequate 20-year water supply. Water Code Section 10910(c)(3) states that a water supply assessment (WSA) generally must meet the following requirements:

“If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regards to whether the public water system’s total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year project would meet the projected water demand associated with the proposed project, in addition to the public water system’s existing and planned future uses, including agricultural and manufacturing uses.”

California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 (AB 939) requires every city and county in the state to prepare a Source Recycling and Recycling Element (SRRE) to its Solid Waste Management Plan that identifies how each jurisdiction would maintain the mandatory State waste diversion goals of 50 percent, enacted in 2000. The purpose of AB 939 is to “reduce, recycle, and reuse solid waste generated in the state to the maximum extent feasible.”

The term “integrated waste management” refers to the use of a variety of waste management practices to safely and effectively handle the municipal solid waste stream with the least adverse impact on human health and the environment. The act has established a waste management hierarchy, as follows:

- Source reduction
- Recycling
- Composting
- Transformation
- Disposal

California Department of Resource, Recycling, and Recovery

In 2010, California’s recycling and waste management programs were combined into the California Department of Resources Recycling and Recovery (CalRecycle) within the Natural Resources Agency. CalRecycle manages programs created through the Integrated Waste

Management Act and the Beverage Container Recycling and Litter Reduction Act, which were formerly part of the California Integrated Waste Management Board (CIWMB) and the California Department of Conservation. CalRecycle merged the duties of the CIWMB with those of the Department of Conservation's Division of Recycling to manage California's waste disposal and recycling efforts.

California Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC) regulates hazardous waste, clean up existing contamination, and looks for ways to reduce the hazardous waste produced in California. 1,000 scientists, engineers, and specialized support staff make sure that companies and individuals handle, transport, store, treat, dispose of, and clean-up hazardous wastes appropriately.

Local

Tulare County General Plan

14. Public Facilities and Services

PFS-1

To establish and maintain acceptable levels of service, minimize costs, and provide criteria for determining the location, capacity, and timing of existing and future public facilities and services.

PFS-2

To ensure the provision of a reliable, safe, and adequate supply of high-quality water as well as effective distribution and storage facilities to meet the existing and future needs in the County.

PFS-2.2 Adequate Systems

The County shall review new development proposals to ensure that the intensity and timing of growth will be consistent with the availability of adequate production and delivery systems. Projects must provide evidence of adequate system capacity prior to approval.

PFS-3.2 Adequate Capacity

The County shall require development proposals to ensure the intensity and timing of growth is consistent with the availability of adequate wastewater treatment and disposal capacity.

3.5.19.3 Impact Analysis

a) Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Production water is the only wastewater that could potentially be generated during project activities. However, no production water is anticipated. Therefore, the proposed project

would not require wastewater treatment and would not exceed requirements of the CVRWQCB. No impact.

- b) Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?***

The project as proposed would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities. No impact.

- c) Would the project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?***

The proposed project would create negligible runoff as the proposed project site is 0.91 acres in size on flat topography. Standard construction Best Management Practices to minimize potential surface soil disturbance would be employed. There are no existing storm water drainage facilities in the project area. The proposed project would not require nor result in the construction of such facilities. No impact.

- d) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or new or expended entitlements needed?***

All water required for the proposed project would be supplied by a local farmer located east of the proposed project site. No new entitlements would be required for the proposed project. No impact.

- e) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?***

See response to 3.5.17.3 (b). No impact.

- f) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?***

KEBO does not anticipate any non-hazardous solid waste to be produced during project activities; however, if any non-hazardous solid waste is produced it would be disposed at the If any wastes test positive for hazardous material they will be disposed of at the Waste Management Kettleman Hills Facility, a licensed Class 1, 2 and 3 treatment, storage and disposal facility. This facility is permitted to receive up to 2,000 tons/day (*Active Landfills Profile*, www.calrecycle.ca.gov) and is located approximately 60 miles due west of the proposed project site. The minimal amount of waste that may be generated during the proposed project would not exceed the capacity of waste disposal facilities. No impact

3.5.19.4 Mitigation Measures

No impact identified. No mitigation necessary.

3.5.19.5 References

California Department of Resources, Recycle, and Recovery. Solid Waste Information System (SWIS). Accessed in 2019.

SECTION 3.5.20 – Wildfires

ISSUES	Potentially Significant Impact		Less Than Significant with Mitigation Incorporated		Less Than Significant Impact		No Impact
WILDFIRES <i>If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:</i>							
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	_____		_____		_____		X
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	_____		_____		_____		X
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	_____		_____		_____		X
d. Expose people or structures to significant risks, including downslope or downstream flooding, or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	_____		_____		_____		X

3.5.20.1 Environmental Setting

The proposed Project site is surrounded by agricultural-related land uses such as row crops, dairies, and agricultural outbuildings. There are approximately four rural residences adjacent to the Project site. The new transmission line along Road 164 would be adjacent to row crops on both sides. As noted earlier, the proposed Project site lies approximately six miles southeast of the City of Tulare and approximately four miles north of the unincorporated community of Woodville. The proposed Project site is zoned as Exclusive Agriculture – 40. No forest or timber land is present at the proposed Project site or in the proposed Project vicinity. Overall, the Project is located in a rural location and is relatively isolated from either an urban or a rural community. The nature of the Project, a renewable energy facility (i.e., solar panel array and typical components such as inverter stations, various wiring, underground cables, combiner boxes, inverters, transformers, access/egress roads, interior roads, etc.), is located on one contiguous 150-acre parcel that does not require a division of land; as such, it will remain as one parcel during its anticipated 35-year life span. Also, following its proposed life of 35 years, the site would be decommissioned and reclaimed as required by the County.

3.5.20.2 Regulatory Setting

Federal

None that apply to the Project.

State

None that apply to the Project.

Local

The Project is not located in or near state responsibility areas or lands classified as very high fire hazard severity zones. The following Tulare County General Plan 2030 Update policies could apply to this Project if it were located on sloped areas, fire hazards areas, lands susceptible to landslides, subsidence/settlement, contamination, and/or flooding; potential for wildland fires; etc.

HS-1.5 Hazard Awareness and Public Education wherein the County shall continue to promote awareness and education among residents regarding possible natural hazards, including soil conditions, earthquakes, flooding, fire hazards, and emergency procedures.

HS-6.2 Development in Fire Hazard Zones wherein the County shall ensure that development in extreme or high fire hazard areas is designed and constructed in a manner that minimizes the risk from fire hazards and meets all applicable State and County fire standards.

HS-6.6 Wildland Fire Management Plans wherein the County shall require the development of wildland fire management plans for projects adjoining significant areas of open space that may have high fuel loads.

HS-6.13 Restoration of Disturbed Land wherein the County shall support the restoration of disturbed lands resulting from wildfires.

HS-6.15 Coordination of Fuel Hazards on Public Lands wherein the County shall work with local and Federal agencies to support efforts to reduce fuel related hazards on public lands.

3.5.20.3 Impact Analysis

a) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

The proposed project is not located in a State Responsibility Area. It is designated Non-wildland/Non-urban in the Tulare County Local Responsibility Area. Additionally, it is designated as “Moderate” in the Fire Hazard Severity Zone map prepared by the California Department of Forestry and Fire Protection (CalFire). Therefore, the proposed project would

not impair the implementation of any adopted emergency response plan or evacuation plan. No impact.

- b) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?***

The proposed project is not located in a State Responsibility Area. It is designated Non-wildland/Non-urban in the Tulare County Local Responsibility Area. Additionally, it is designated as “Moderate” in the Fire Hazard Severity Zone map prepared by CalFire. The proposed project is located on flat land and is not in an area that will not exacerbate wildfire risks or expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. No impact.

- c) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?***

The proposed project is not located in a State Responsibility Area. It is designated Non-wildland/Non-urban in the Tulare County Local Responsibility Area. Additionally, it is designated as “Moderate” in the Fire Hazard Severity Zone map prepared by CalFire. No impact.

- d) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslope or downstream flooding, or landslides, as a result of runoff, post-fire slope instability, or drainage changes?***

The proposed project is not located in a State Responsibility Area. It is designated Non-wildland/Non-urban in the Tulare County Local Responsibility Area. Additionally, it is designated as “Moderate” in the Fire Hazard Severity Zone map prepared by CalFire. The project as proposed will not expose people or structures to significant risks, including downslope or downstream flooding, or landslides, as a result of runoff, post-fire slope instability, or drainage changes. No impact.

3.5.20.4 Mitigation Measures

No impact identified. No mitigation necessary.

3.5.20.5 References

----- Index to Landslide Maps in California.

Website: http://www.conservation.ca.gov/cgs/rghm/landslides/Pages/ls_index.aspx

----. 2030 Update Tulare County General Plan. Accessed 2019. Available online: <http://generalplan.co.tulare.ca.us/>

CalFire Enterprises GIS Portal. Accessed in September 2020.

Website:

<https://egis.fire.ca.gov/portal/home/item.html?id=f35d2f86ab8c4bf4947f0a9b29134715>

SECTION 3.5.21 – Mandatory Findings of Significance

ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
MANDATORY FINDINGS OF SIGNIFICANCE				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	_____	X	_____	_____
b. Does the project have impacts that are individually limited, but cumulatively considerable (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	_____	_____	X	_____
c. Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?	_____	_____	_____	X

3.5.21.1 Impact Analysis

- a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?***

With the incorporation of required mitigation measures as outlined in this IS/MND, the proposed project does not have the potential to significantly degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.

- b) *Does the project have impacts that are individually limited, but cumulatively considerable (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*

CEQA Guidelines state that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of the project are cumulatively considerable (CCR §15065). The assessment of the significance of the cumulative effects of the project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects.

Past, Present and Reasonably Foreseeable Future Projects Which May Cause Related Impacts

For purposes of this cumulative impact’s analysis, projects within a six (6) mile radius were considered for evaluating all environmental factors. Projects were reviewed in CalGEM’s 2019 CEQA Notices, the Tulare County Resource Management Agency’s 2019 CEQA Notices and Notices of Preparation for the cumulative impact analysis. No projects were identified within six (6) miles of the proposed project site. Additionally, the proposed project is not a part of any larger, planned development.

The proposed project site is not located in the boundaries of a CalGEM designated oil or gas field. According to CalGEM records, there are 57 inactive wells within six (6) miles of the proposed project site. The nearest new well, the Quinn 86-7 is located 6.22 miles to the south of the proposed project site. No other mineral resources have been identified within six (6) miles of the proposed project site.

Potential Cumulative Impacts

Based upon the results of the initial study, it was determined that the proposed project would have no impacts associated to the following resources and as a result, there would be no cumulative impact:

Aesthetics	Population and Housing
Agricultural and Forest Resource	Public Services
Energy	Recreation
Geology and Soil	Tribal Cultural Resources
Hydrology and Water Quality	Utility and Service Systems
Land Use and Planning	Vibration
Mineral Resources	Wildfires
Population and Housing	

The following is a discussion of cumulative impacts that could result from the proposed project in conjunction with past, other current and probable future projects. As previously stated, no projects were identified within six (6) miles of the proposed project. Figure 12 below describes the land use types that are included in the six (6) mile radius analysis. The term “cumulatively considerable”, for the purposes of this analysis, means the effects of a

project are considerable when viewed in connection with effects past, other current and probable future projects.

Air Quality

The SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts (rev. 2002) provides guidance on evaluating cumulative air quality impacts. For cumulative ozone impacts, the SJVAPCD recommends quantifying project related ROG and NO_x emission to determine whether they exceed SJVAPCD thresholds. The proposed project would construct one (1) well site and drill one (1) well in 2020 (Tables 3.5.3.3-2 and 3.5.3.3-3). The proposed project would not exceed the annual thresholds for ROG (10 tons/yr.) and NO_x (10 tons/yr.).

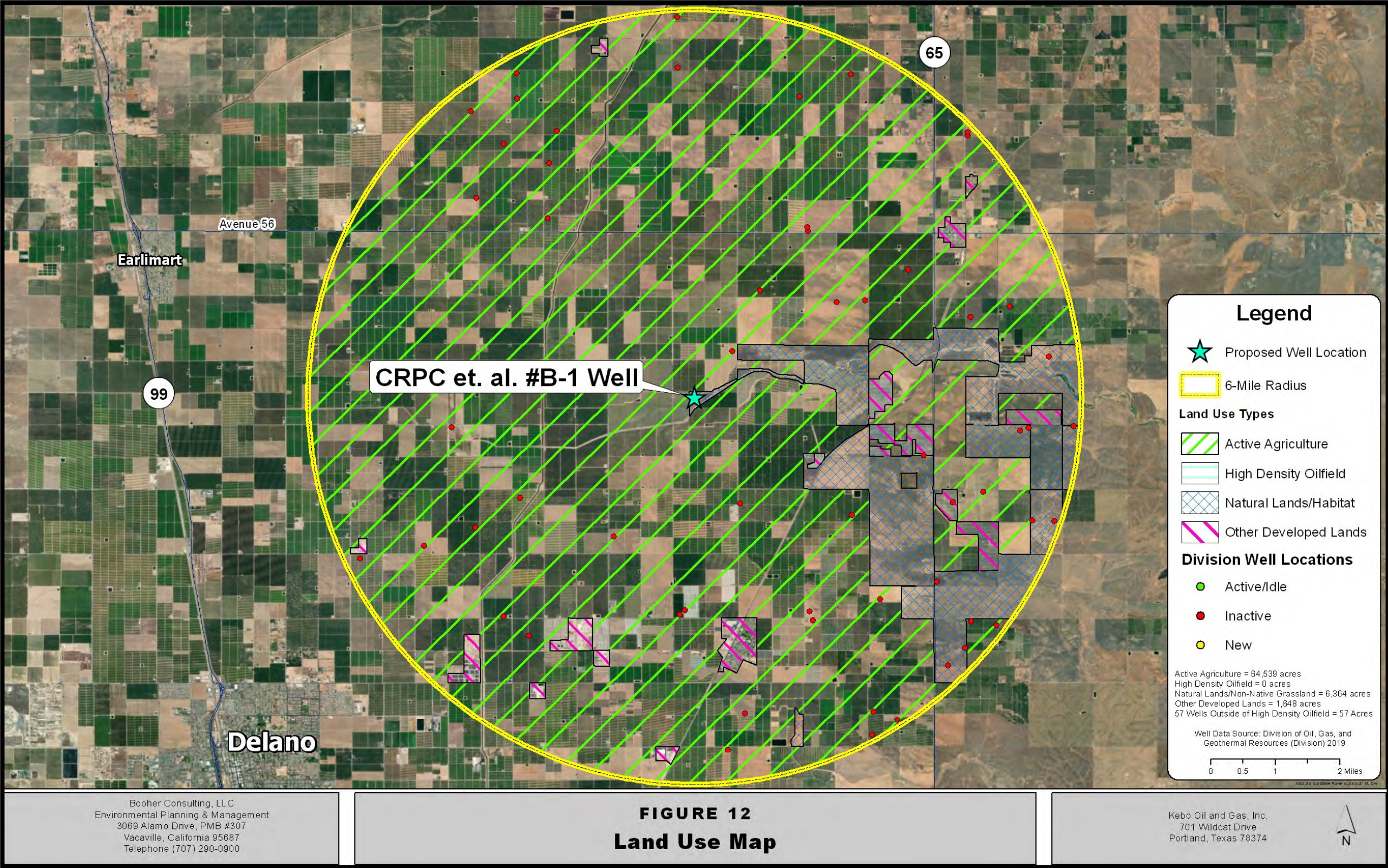
For cumulative PM-10 impacts, the SJVAPCD recommends considering local impacts to sensitive receptors near the site from earth moving activities. There are no projects within 6 miles of the proposed project and the proposed project is surrounded by agricultural production. The proposed project would implement mitigation measures (Air Quality 1 – 6) to control dust and reduce impacts to less than significant.

The proposed project would not have a cumulatively considerable impact on air quality.

Since the air quantity impacts of the present project are individually insignificant, and the present project is in compliance with the SJVAPCD's approved plan emission reduction plans, we conclude that the air quality impacts of the present project are not only individually insignificant but also not cumulatively considerable.

Biological Resources

The biological assessment conducted for the project found that no special-status animal or plant species were present within the proposed project site. No suitable habitat for sensitive plant and animal species was observed within the proposed project site. No wetland, stream or other sensitive community types were observed within the proposed project site during the biological assessment survey. However, the proposed project has incorporated Mitigation Measures (Biological 1 through Biological 20) to ensure potential impacts to biological resources would be less than significant.



Additionally, as shown on Figure 12, there are approximately 6,364 acres of natural land/non-native grassland (habitat) within a six (6) mile radius of the proposed project site. Additionally, there are approximately 57 inactive oil and gas wells located within a six (6) mile radius of the proposed project site and it is estimated that these wells would encompass a maximum total of 57 acres. Many of these 57 wells may have been plugged and abandoned and the sites restored so this is considered an estimate. Accordingly, past, other current and probable future projects would impact approximately 57 acres of natural land/non-native grassland within a six (6) mile radius of the proposed project site. Accordingly, when combined with the 0.91 acres of temporary surface disturbance to natural lands/non-native grassland disturbed by the proposed project site, 57.91 acres of natural lands/non-native grassland would be cumulatively impacted within a six (6) mile radius of the proposed project site. This represents a cumulative impact of 0.91% to natural lands/non-native grassland within a six (6) mile radius of the proposed project site. Accordingly, the project would not have a cumulatively considerable effect on biological resources, primarily because the land would be restored as noted in the Project Description.

Cultural Resources

The pedestrian survey, cultural resources records search, paleontological records search and Native American Consultation did not identify any cultural, paleontological or historic resources within the proposed project site. Accordingly, there would be no cumulative impact to cultural resources.

Greenhouse Gas Emissions

Tulare County reviewed the 2009 District Policy and guidance, which provide the SJVAPCD and other lead agencies a process to assess GHG emission impacts from stationary sources. The District Policy focuses on long-term (post construction) emissions and is one that the CalGEM is applying to assess long-term project impacts on GHG emissions from stationary sources. The SJVAPCD is responsible for air quality and pollution control in the SJVAB and is charged with the development and implementation of air pollution control measures in the San Joaquin Valley Air Basin. The SJVAPCD adopted a policy and developed guidance to assist lead agencies and interested parties in assessing and reducing impacts of project specific GHG emissions.

District Policy emphasizes Best Performance Standards (BPS) as a streamlined method of addressing impacts. Projects implementing BPS would be determined to have less than significant individual and cumulative impact on global warming. The SJVAPCD has established a set of BPS for a variety of sources; however, compression ignition engines (such as diesel engines used for project construction or other mobile sources) are not included in the current BPS list. District Policy requires projects not able to implement BPSs to reduce stationary GHG emissions by 29% as compared to business as usual.

The proposed project would emit a small amount of GHG from stationary source (pump motor (15hp)). The well pump motor would be required to follow the existing regulations to reduce GHG emissions from energy generating activities relative to efficiency, renewable

portfolio standard, and emissions performance standards by regulators such as the California Energy Commission program, the CARB, and the air districts.

The proposed project would generate a total of 889.29 tons of CO₂(e)/yr. and those emissions would be generated by a combination of mobile equipment and vehicle use for the construction of one (1) well site and the drilling of one (1) well. Short-term or construction related activities would generate 865.07 tons of CO₂ (e)/yr. over a total duration of 207.5 days per well. Long-term or production related project activities would generate an estimated 24.22 tons/year for the well. Under the AB-32 scoping plan, mobile emissions are being controlled and reduced through a series of regulations and incentives. Some of these GHG reduction measures include:

1. Advanced Clean Cars
2. Low Carbon Fuel Standard
3. Regional Transportation targets
4. Vehicle Efficiency Measures
5. Ship Electrification at Ports
6. Goods Movement
7. Heavy Duty Vehicle (Trucks) GHG Emission Reductions
8. Medium and Heavy-Duty Hybridization Project
9. High Speed Rail

Data compiled by the CARB quantified the expected GHG emission reductions under these measures and compared these reductions with Business as Usual (BAU). The CARB 2011 Final Supplement to the Scoping Plan indicates that the state is on target to meet the 2020 reductions attributable to transportation related emissions. KEBO's operation would be subject to several of the GHG reduction measures listed above such as the Low Carbon Fuel Standard, Vehicle Efficiency Measures and Heavy-Duty Truck Emission Reductions. As a result, KEBO would be participating to meet with the emission reductions mandated under AB-32.

The proposed project would continue to be subject to regulations implemented under AB 32 as determined by CARB. Therefore, the proposed project's impacts to global climate change would remain less than cumulatively considerable and therefore less than significant.

Hazards and Hazardous Materials

The proposed project would include the transportation and storage of hazardous materials including fuels, oils, lubricants, hydraulic fluids, and solvents. All hazardous materials, such as diesel fuel, would be transported and stored according to applicable federal, state, and local regulations. In the event of a hazardous materials spill at the proposed project site, impacts would be localized, not extending beyond the specific site. If a spill occurs at another oil and gas well site location, resulting impacts would also be localized. The nearest new well, the Quinn 86-7 is located 6.22 miles to the south of the proposed project site. No cumulative impacts are anticipated.

Noise

The geographic scope of the cumulative noise analysis consists of the immediate project vicinity (adjacent parcels) and surrounding sensitive receptors. Noise impacts associated with the proposed project would result in short term impacts from construction activities and long-term impacts associated with project production. According to CalGEM records, there are 57 inactive wells within six (6) miles of the proposed project site. Even though other planned and approved projects would be required to evaluate short- and long-term noise impacts and implement mitigation, as necessary, it is reasonable to assume that the planned projects would have similar impacts as compared to the proposed project.

However, noise is a highly localized phenomenon, and the other existing and planned projects are expected to be located at least 6.0 miles from the proposed project site. It is also important to keep in mind that because decibels are logarithmic ratios, they cannot be manipulated in the same way as arithmetic numbers. Addition of decibels produces such results as $70 \text{ dB} + 70 \text{ dB} = 73 \text{ dB}$. For example, if a project site produced a sound level of 70 dB and another identical facility was located adjacent to the first site, the two project sites would produce a total sound level of 73 dB. This is twice as much acoustic energy, with only a three-dB change. As a second example of decibel addition, if one project site produces a sound level of 70 dB and another at 60 dB, the combined sound level would be 70.4 dB. When the difference between two (2) sound levels is greater than 10 decibels, the lesser sound is negligible in terms of affecting the total sound level. It is therefore reasonable to conclude that project generated noise would not combine with noise from other current projects and probable future projects in a manner resulting in cumulatively considerable noise impacts.

Transportation

Booher Consulting, LLC reviewed the most recent (2017) traffic counts conducted by Caltrans at the intersection of Highway 99 and Avenue 24, which is the nearest available traffic count to the proposed project site. According to Caltrans, the 2017 AADT for this intersection is 53,000 vehicles. As the proposed project is the only project occurring within 6 miles, the maximum number of daily vehicle round trips on Highway 99 and Avenue 24 would be 64. The proposed project would increase the roadway traffic at the intersection of Highway 99 and Avenue 24 by a maximum of 0.12% ($64/53,000$). Based on the additional maximum daily increase of 0.12% at Highway 99 and Avenue 24, cumulative impacts associated with these projects would be considered less than significant.

The increase in traffic trips due to the cumulative impact of the proposed project in conjunction with no new projects would have a less than significant impact. The long-term traffic from the proposed project when added to the existing traffic at the intersection of Highway 99 and Avenue 24 would not alter the Level of Service ratings on the roadway or increase traffic so as to cause the roadway to be reclassified to an unacceptable LOS rating.

- c) *Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?*

The analyses of environmental issues contained in this IS/MND indicate that the project is not expected to have a substantial impact on human beings, either directly or indirectly. Mitigation measures have been incorporated into the proposed project to reduce all potentially significant impacts to less than significant.

SECTION 3.5.22 – Applicant Certification

I hereby certify that the statements furnished above and in the attached exhibits present data and information required for this initial evaluation to the best of my ability, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Signature _____ Date _____

SECTION 3.5.23 – Document Recipients

Mr. Reed Schenke Tulare County Resource Management Agency Director 5961 South Mooney Boulevard Visalia, CA 93277	Mrs. Shannon Peacock Booher Consulting, LLC 3069 Alamo Drive, #307 Vacaville, CA 95687
San Joaquin Valley Unified APCD ISR/CEQA Department 1990 E. Gettysburg Ave. Fresno, CA 93726	KEBO OIL AND GAS, Inc. 701 Wildcat Drive Portland, Texas 78374
Mr. Dane S. Johnson Ca Regional Water Quality Control Board 1685 E Street Fresno, CA 93706	Mr. Thomas Leeman U.S. Fish and Wildlife Service Sacramento Fish and Wildlife Office 2800 Cottage Way, W-2605 Sacramento, CA 95825-1846
Ms. Julie Vance California Department of Fish and Game 1234 E. Shaw Avenue Fresno, CA 93710	

APPENDIX A

KEBO OIL AND GAS, Inc.
CRPC et. al. #B-1 Project
MITIGATION MONITORING AND REPORTING PLAN

Environmental Impact	Mitigation Measures	Timing of Monitoring Requirement	Responsibility for Compliance	Method for Compliance	Enforcement	Checkoff Date/ Initials
3.5.3 - Air Quality						
a) Violate any air quality standard or contribute to an existing or projected air quality violation?	AIR-1 - All disturbed areas, including storage piles, which are not being actively used for construction purposes, shall be effectively stabilized using water.	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Inspection by environmental monitor.	Require as condition of approval.	
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors?)	AIR-2 - Unpaved access roads shall be effectively stabilized of dust emissions using water.	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Inspection by environmental monitor.	Require as condition of approval.	
	AIR-3 - All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions by using the application of water or by presoaking.	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Inspection by environmental monitor.	Require as condition of approval.	
	AIR-4 - When materials are transported off-site, all material shall be covered, effectively wetted to limit visible dust emissions, or at least six (6) inches of freeboard space from the top of the container shall be maintained.	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Inspection by environmental monitor.	Require as condition of approval.	
	AIR-5 - Following addition of materials to, or removal of materials from the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions by using sufficient water.	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Inspection by environmental monitor.	Require as condition of approval.	
	AIR-6 - Limit of traffic speeds on unpaved access roads to 15mph.	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Inspection by environmental monitor.	Require as condition of approval.	

KEBO OIL AND GAS, Inc.
CRPC et. al. #B-1 Project
MITIGATION MONITORING AND REPORTING PLAN

Environmental Impact	Mitigation Measures	Timing of Monitoring Requirement	Responsibility for Compliance	Method for Compliance	Enforcement	Checkoff Date/ Initials
3.5.4 - Biological Resources						
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations or by the California Dept. of Fish & Game or US Fish & Wildlife Service?	BIO-1 - Environmental Awareness Training will be presented to all personnel working in the field on the proposed Project site. Training shall consist of a brief presentation in which a biologist knowledgeable of endangered species biology and legislative protections will explain endangered and threatened species concerns. Training will include a discussion of special-status plants and wildlife species. Species biology, habitat needs, status under the Endangered Species Act, and protection under the Migratory Bird Treaty Act will be discussed. In addition, measures being incorporated for the protection of these species and their habitats will also be discussed.	Prior to initiation of construction activities.	Tulare County RMA, CalGEM and KEBO.	Sign in sheets for Environmental Awareness Training will be provided to the Division upon completion.	Require as condition of approval.	
	BIO-2 - A biological pre-disturbance survey of the proposed Project will be conducted by a qualified biologist no more than 14 days prior to starting Project activities. If no work occurs within 14 days of surveys, additional surveys may be required so they remain current. a. If no special-status species are identified within the Project site, and conditions have not changed, then construction activities may proceed. b. If special-status species or habitat features (i.e., burrows, dens, nests, etc.) are observed during pre-disturbance surveys, additional surveys may be required, and other avoidance and mitigation measures may apply.	Prior to initiation of construction activities.	Tulare County RMA, CalGEM and KEBO.	Submission of pre-disturbance survey report to Division.	Require as condition of approval.	

KEBO OIL AND GAS, Inc.
CRPC et. al. #B-1 Project
MITIGATION MONITORING AND REPORTING PLAN

Environmental Impact	Mitigation Measures	Timing of Monitoring Requirement	Responsibility for Compliance	Method for Compliance	Enforcement	Checkoff Date/ Initials
	<p>BIO-3 - If ground disturbing activities are planned to occur during the breeding season of migratory bird or raptor species (February through mid-September), surveys for nesting birds will be conducted in the Project. Pre-disturbance surveys for nesting birds will be conducted by a qualified biologist no more than 14 days prior to the start of Project activities. If Project activities do not commence within 14 days of nesting bird surveys, additional surveys may be required to remain current.</p> <p>a. If no active nest(s) are found in the Project or buffer areas, then Project activities may proceed, and no further mitigation measures will be required.</p> <p>b. If active nest(s) of migratory birds and non-listed raptors are found, then exclusion zones will be established a minimum of 250-feet around a nest. Project activities will avoid disturbance within the exclusion zone during the nesting season.</p>	Prior to initiation of construction activities.	Tulare County RMA, CalGEM and KEBO.	Site inspection by environmental monitor.	Require as condition of approval.	
	<p>BIO-4 – A qualified biologist will be present during initial surface disturbance to serve as a biological monitor for the Project.</p>	During initial surface disturbance.	Tulare County RMA, CalGEM and KEBO.	Site inspection by environmental monitor.	Require as condition of approval.	
	<p>BIO-5 - Project site boundaries shall be clearly delineated by stakes and /or flagging to minimize inadvertent degradation or loss of adjacent lands during Project operations. Staff and/or its contractors shall post signs and/or place fencing around the proposed Project site to restrict access of vehicles and</p>	Prior to initiation of construction activities and ongoing during project	Tulare County RMA, CalGEM and KEBO	Site inspection by environmental monitor	Require as condition of approval.	

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	equipment outside the Project boundary.					
	BIO-6 - A Project representative will establish restrictions on Project-related traffic to approved access routes and the proposed well site. Off-road traffic outside of the designated Project area is prohibited.	Prior to initiation of construction activities and ongoing during project activities	Tulare County RMA, CalGEM and KEBO	Site inspection by environmental monitor	Require as condition of approval.	
	BIO-7 - Project-related traffic shall observe a 20 mph speed limit, except on County roads and State highways to avoid impacts to special-status wildlife species.	Ongoing during project activities	Tulare County RMA, CalGEM and KEBO	Site inspection by environmental monitor	Require as condition of approval.	
	BIO-8 - Hazardous materials, fuels, lubricants, and solvents that spill accidentally during project-related activities shall be cleaned up and removed from the proposed Project site as soon as possible according to applicable federal, state and local regulations.	Ongoing during project activities	Tulare County RMA, CalGEM and KEBO	Site inspection by environmental monitor	Require as condition of approval.	
	BIO-9 - All food-related trash items such as wrappers, cans, bottles or food scraps generated during Project activities will be disposed of only in closed containers and regularly removed from the proposed Project site. No deliberate feeding of wildlife will be allowed.	Ongoing during project activities	Tulare County RMA, CalGEM and KEBO	Provide trash containers. Site inspection by environmental monitor	Require as condition of approval.	
	BIO-10 - To prevent harassment or mortality of wildlife species via predation, or destruction of their dens or nests, no domestic pets will be permitted on the Project.	Ongoing during project activities	Tulare County RMA, CalGEM and KEBO	Site inspections by environmental monitor.	Require as condition of approval	
	BIO-11 - KEBO will implement the following	Prior to	Tulare	Site inspections by	Require as	

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	<p>measures (measures 11-19) contained in the USFWS's Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 2011):</p> <p>a. For kit fox dens within 200 feet of proposed construction area(s), exclusion zones will be established prior to construction by a qualified biologist. Exclusion zones will be roughly circular with a radius of the following distances measured outward from the entrance:</p> <p>Potential den 50 feet Atypical den 50 feet Known den 100 feet Natal/pupping den *** ***USFWS and CDFW must be contacted (occupied and unoccupied)</p> <p>b. Protective exclusion zones can be placed around all known and potential dens which occur outside the project footprint (conversely, the project boundary can be demarcated).</p> <p>c. To ensure protection of known dens, exclusion zones should be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by kit foxes. Acceptable fencing includes untreated wood particle board, silt fencing, or orange construction</p>	<p>initiation of construction activities and ongoing during project activities</p>	<p>County RMA, CalGEM and KEBO</p>	<p>environmental monitor.</p>	<p>condition of approval</p>	

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	<p>fencing, as long as it has opening for kit fox ingress/egress and keeps humans and equipment out.</p> <p>d. Exclusion zone barriers shall be maintained until all construction related or operational disturbances have been terminated. At that time all fencing shall be removed to avoid attracting subsequent attention to the dens.</p> <p>e. For potential and/or atypical dens, placement of 4-5 flagged stakes 50 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required, but the exclusion zone must be observed.</p> <p>f. Only essential vehicle operation on existing roads and foot traffic should be permitted. Otherwise, all construction, vehicle operation, material storage, or any type of surface-disturbing activity should be prohibited or greatly restricted within the exclusion zones.</p> <p>BIO-12 - If a natal/pupping den is discovered within the proposed Project site or within 200-feet of the Project boundaries, the USFWS and CDFW shall be immediately notified and under no circumstances should the den be disturbed or destroyed without prior authorization. If the pre-disturbance survey reveals an active natal pupping den or new information, KEBO should contact the USFWS and CDFW immediately for guidance.</p>	<p>Prior to initiation of construction activities and ongoing during project activities</p>	<p>Tulare County RMA, CalGEM and KEBO</p>	<p>Site inspection by environmental monitor.</p>	<p>Require as condition of approval</p>	

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	<p>BIO-13 - Destruction of any known or natal/pupping kit fox den requires take authorization/permit from the USFWS and CDFW. Limited destruction of kit fox dens may be allowed, if avoidance is not a reasonable alternative, provided the following procedures are observed:</p> <ul style="list-style-type: none"> a. Known dens occurring within the footprint of the Project must be monitored for three (3) consecutive days with tracking medium or an infra-red camera beam to determine the current use. If no kit fox activity is observed during this period, the den(s) should be destroyed immediately to preclude subsequent use. b. If kit fox activity is observed at the den(s) during this period, the den(s) should be monitored for at least five (5) consecutive nights from the time of the observation to allow any resident animal to move to another den during its normal activity. Only when the den(s) are determined unoccupied may the den(s) be excavated. c. Destruction of the den(s) should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den(s) should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter to use the den(s) during the construction period. If at any point during excavation, a kit fox is 	Ongoing during project activities.	Division and KEBO	Site inspection by environmental monitor.	Require as condition of approval.	

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	<p>discovered inside the den(s), the excavation activity shall cease immediately and monitoring the den as described above should resume. Destruction of the den(s) may be completed when, in the judgment of the biologist, the animal has escaped without further disturbance, from the partially destroyed den(s).</p>					
	<p>BIO-14 - Potential dens occurring within the footprint of the project or within 50 feet must be monitored for three (3) consecutive days with tracking medium or an infra-red camera beam to determine the current use. If no kit fox activity is observed during this period, the den(s) should be destroyed immediately to preclude subsequent use.</p>	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO	Site inspections by environmental monitor.	Require as condition of approval.	
	<p>BIO-15 - Destruction of the den(s) should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den(s) should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter to use the den during the construction period. If at any point during excavation, a kit fox is discovered inside the den(s), the excavation activity shall cease immediately and monitoring the den(s) should resume, as described above. Destruction of the den may be completed when, in the judgment of the biologist, the animal has escaped without further disturbance, from the partially destroyed den.</p>	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Site inspections by environmental monitor.	Require as condition of approval.	
	<p>BIO-16 - If any kit fox den is considered to be a potential den, but is later determined during monitoring or destruction to be currently, or</p>	Ongoing during project activities.	Tulare County RMA, CalGEM and	Site inspection by environmental monitor.	Require as condition of approval.	

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	<p>previously used by kit fox (e.g., if kit fox sign is found inside), then all construction activities shall cease and the USFWS and CDFW shall be notified immediately.</p> <p>BIO-17 – To prevent entrapment of animals during construction, all excavated steep-walled holes or trenches less than five (5) feet in depth will be covered at the close of each working day with plywood or similar material. For trenches that cannot be closed daily, one or more escape ramps constructed of earthen fill or wooden planks no less than 10 inches in width will be installed and secured to the top for stability. Ramps will be located at no greater than 1,000-foot intervals (for pipelines and trenches) and at no less than 45-degree angles. All excavations greater than five (5) feet in depth will be covered at the end of each work day and when not being worked on. All covered and open excavations will be inspected at the beginning and end of each day (including non-work days).</p> <p>BIO-18 – Immediately before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. Any animals discovered that do not escape on their own immediately will be removed from the trench or hole by a qualified biologist and allowed to escape unimpeded. All discoveries of special-status animals in excavations or trenches will be reported to the CDFW and/or USFWS within 24 hours of the discovery.</p> <p>BIO-19 - All pipes, culverts, or similar structures</p>	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Site inspection by environmental monitor.	Require as condition of approval.	
		Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Site inspection by environmental monitor.	Require as condition of approval.	
		Ongoing during	Tulare	Site inspection by	Require as	

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	<p>stored at the proposed Project overnight having a diameter of four (4) inches or greater will be inspected thoroughly for wildlife species before being buried, capped, or otherwise used or moved in any way. Pipes laid in trenches overnight will be capped. If during Project implementation a wildlife species is discovered inside a pipe, that segment of pipe will not be moved or, if necessary, moved only once to remove it from the path of Project activity, until the wildlife species has escaped.</p> <p>BIO-20 - KEBO should designate a Project representative as the contact for any employee or contractor who finds a dead, injured, or entrapped special-status wildlife species. If any special-status species or migratory birds are found dead, injured, or entrapped in the proposed Project site, the CDFW and/or USFWS will be notified within 24 hours.</p>	<p>project activities.</p> <p>Prior to initiation of and ongoing during project activities</p>	<p>County RMA, CalGEM and KEBO.</p> <p>Tulare County RMA, CalGEM and KEBO.</p>	<p>environmental monitor.</p> <p>Site inspection by environmental monitor.</p>	<p>condition of approval.</p> <p>Require as condition of approval.</p>	
3.5.5 - Cultural Resources						
<p>a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?</p> <p>b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?</p>	<p>CUL-1. In the unlikely event archaeological resources are identified on the project site, all ground disturbing activities would cease, and a qualified archaeologist would be retained by KEBO to assess the significance of any find. The archaeologist would have the authority to stop or divert the construction excavation as necessary. The archaeologist would evaluate the find in conformance with section 15064.5 of CEQA Guidelines. A plan to mitigate any adverse impacts would be prepared by the archaeologist and contain procedures to follow. Work may proceed on the site once evaluation of the find is complete.</p>	<p>Ongoing during project activities.</p>	<p>Tulare County RMA, CalGEM and KEBO.</p>	<p>Include archaeological awareness in environmental awareness training.</p>	<p>Require as condition of approval.</p>	

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c) Directly or indirectly destroy a unique paleontological resources or site or unique geologic feature?	CUL-2 – In the unlikely event paleontological resources are identified on the project site, a qualified paleontologist would be retained by KEBO to assess the significance of any find and would have the authority to stop or divert the construction excavation as necessary. A plan to mitigate any adverse impacts would be prepared by the paleontologist and contain procedures to follow. Work may proceed on the site once evaluation of the find is complete.	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Include paleontological/ archaeological awareness in environmental awareness training.	Require as condition of approval.	
d) Disturb any human remains, including those interred outside of formal cemeteries?	CUL-3 – In the unlikely event human remains are discovered during construction of the project site, site personnel would contact the County Coroner and stop work as required by Public Resources Code §5097.98-99 and Health and Safety Code §7050.5. If the remains are determined to be Native American, the County Coroner would notify the NAHC in accordance with PRC §5097.98. KEBO shall, in consultation with the identified descendants of the remains and/or NAHC, identify the appropriate measures for treatment or disposition of the remains.	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Include archaeological awareness in environmental awareness training.	Require as condition of approval.	
3.5.8 - Hazards & Hazardous Materials						
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	HAZ-1 - All hazardous materials such as diesel fuel shall be stored according to the California Code of Regulations (CCR) Title 22, 23, 26 & 27 and California Fire Codes (CFR) Title 24 and Tulare County General Plan. Material Safety Data Sheets shall be on each site. Hazardous waste materials shall be managed properly in accordance with requirements that comply with or given authority by	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Include handling of hazardous materials/wastes training in environmental awareness training. Inspection by environmental monitor.	Require as condition of approval.	
b. Create a significant						

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hazard to public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	the Code of Federal Regulations (40 CFR) and refined in California through CCR, Title 14, 22, 23, 26 & 27. Training shall be provided to all personnel involved in handling of hazardous materials/waste.					
	HAZ-2 - In order to minimize potential impacts associated with a blowout, KEBO shall comply with CCR Title 14, Division 2, Chapter 4, Articles 3 and 4, specifically Article 4, Sections 1941-1942. Requirements for well casing design and blowout prevention equipment are regulated by the Division. Division engineers shall be notified for required tests and other operations.	Ongoing during drilling and testing activities for each well.	Tulare County RMA, CalGEM and KEBO.	Inspection by Division.	Require as a condition of approval.	
	HAZ-3 - All above ground storage tanks will be located within a bermed area, which provides a storage volume of at least 110% of the storage volume of the largest tank. Daily inspections of the above ground storage tanks will be conducted and an inspection log will be maintained for review by regulatory agency personnel. The inspection log will also document corrective actions taken, if necessary.	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Inspection of environmental monitor.	Require as a condition of approval.	
	HAZ-4 - Fluid disposal shall follow RWQCB regulations (CCR Title 23 Waters).	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Inspection by environmental monitor	Require as a condition of approval.	
	HAZ-5 - If project development uncovers any previously unknown oil, gas, or injection wells, the Division shall be notified. If unrecorded wells are uncovered during excavation or grading, remedial plugging operations may be required.	Ongoing during project activities.	Tulare County RMA, CalGEM and KEBO.	Inspection by environmental monitor and notification of Division if unknown wells discovered.	Require as a condition of approval.	

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				Except as where otherwise noted, the environmental monitor shall verify the mitigation measures and send documentation to the Division's CEQA Unit at 801 K Street, MS 18-05, Sacramento, CA 95841		

APPENDIX B

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Short and Long Term Risk Score Calculations

Table 1a
Emission Calculation of Construction Emissions from Equipment

PROJECT PHASE							ROG				NOx				PM-10				
	#	HP	Hr/Day	Total Days	Total Hours	Capacity Factor	(g/hp-hr)	(lbs/hr)	(lbs/day)	(tons)	(g/hp-hr)	(lbs/hr)	(lbs/day)	(tons)	(g/hp-hr)	(lbs/hr)	(lbs/day)	(tons)	
Site Prep (Ref: Table 2.3.2-1)																			
	Grader	1	140	10	3	30	41%	0.567	7.169E-02	7.169E-01	1.075E-03	5.53	6.992E-01	6.992E+00	1.049E-02	0.3090	3.907E-02	3.907E-01	5.860E-04
	Roller	1	100	10	1	10	38%	0.388	3.248E-02	3.248E-01	1.624E-04	3.662	3.065E-01	3.065E+00	1.533E-03	0.2480	2.076E-02	2.076E-01	1.038E-04
	Compactor	1	100	10	3	30	36%	0.446	3.537E-02	3.537E-01	5.305E-04	4.061	3.220E-01	3.220E+00	4.830E-03	0.2960	2.347E-02	2.347E-01	3.521E-04
	TOTALS ==>						1.395E-01 1.395E+00 1.768E-03				1.328E+00 1.328E+01 1.685E-02				8.330E-02 8.330E-01 1.042E-03				
Drilling (Ref Table 2.3.3-1)																			
	Fork Lift	1	50	8	7	56	20%	1.124	2.476E-02	1.981E-01	6.932E-04	4.686	1.032E-01	8.257E-01	2.890E-03	0.3600	7.930E-03	6.344E-02	2.220E-04
	Drill Rig Motor # 1 (Electric)	1	1600	0	0	0	0%	0.000	0.000E+00	0.000E+00	0.000E+00	0.000	0.000E+00	0.000E+00	0.000E+00	0.0000	0.000E+00	0.000E+00	0.000E+00
	Mud Pump Motor #2 (Electric)	1	1600	0	0	0	0%	0.000	0.000E+00	0.000E+00	0.000E+00	0.000	0.000E+00	0.000E+00	0.000E+00	0.0000	0.000E+00	0.000E+00	0.000E+00
	Power Generator	2	1350	24	7	336	50%	0.242	7.196E-01	1.727E+01	6.045E-02	3.608	1.073E+01	2.575E+02	9.012E-01	0.0790	2.349E-01	5.638E+00	1.973E-02
	Small Generator	1	100	24	7	168	50%	0.364	4.009E-02	9.621E-01	3.367E-03	3.173	3.494E-01	8.387E+00	2.935E-02	0.1790	1.971E-02	4.731E-01	1.656E-03
	TOTALS ==>						7.844E-01 1.843E+01 6.451E-02				1.118E+01 2.667E+02 9.334E-01				2.626E-01 6.174E+00 2.161E-02				
Completion & Testing (Ref: Table 2.3.4-1)																			
	Completion Rig	1	350	10	3	30	50%	0.208	8.018E-02	8.018E-01	1.203E-03	2.062	7.948E-01	7.948E+00	1.192E-02	0.0720	2.775E-02	2.775E-01	4.163E-04
	Flare (Calculated in Table 2)	180	days						2.550E-01	2.295E-02			4.760E+00	4.284E-01			5.000E+00	4.500E-01	
	TOTALS ==>						8.018E-02 1.057E+00 2.415E-02				7.948E-01 1.271E+01 4.403E-01				2.775E-02 5.278E+00 4.504E-01				
Equip. for Production Equip Install Phase (Ref: Table 2.3.5-1)																			
	Welding Truck	1	200	8	5	40	42%	0.237	4.385E-02	3.508E-01	8.770E-04	2.668	4.936E-01	3.949E+00	9.873E-03	0.0900	1.665E-02	1.332E-01	3.330E-04
	Side Boom Crane	1	250	8	5	40	20%	0.384	4.229E-02	3.383E-01	8.458E-04	4.563	5.025E-01	4.020E+00	1.005E-02	0.1880	2.070E-02	1.656E-01	4.141E-04
	TOTALS ==>						8.614E-02 6.891E-01 1.723E-03				9.962E-01 7.969E+00 1.992E-02				3.736E-02 2.989E-01 7.471E-04				
Equip for Prod Phase (Ref: Table 2.3.5-2)																			
	Pumping Unit (IC Engine)	1	15	10	365	3,650	50%	0.946	1.563E-02	1.563E-01	2.852E-02	4.622	7.635E-02	7.635E-01	1.393E-01	0.3340	5.518E-03	5.518E-02	1.007E-02
	Workover Rig (every 3 yrs)	1	345	10	2	20	50%	0.208	7.903E-02	7.903E-01	7.903E-04	2.062	7.835E-01	7.835E+00	7.835E-03	0.0720	2.736E-02	2.736E-01	2.736E-04
	TOTALS ==>						9.466E-02 9.466E-01 2.931E-02				8.598E-01 8.598E+00 1.472E-01				3.287E-02 3.287E-01 1.034E-02				
Plugging & Abandonment (Ref: Table 2.3.6-1)																			
	Production Rig (ICE)	1	345	10	5	50	50%	0.208	7.903E-02	7.903E-01	1.976E-03	2.062	7.835E-01	7.835E+00	1.959E-02	7.20E-02	2.736E-02	2.736E-01	6.839E-04
		TOTALS ==>						7.903E-02 7.903E-01 1.976E-03				7.835E-01 7.835E+00 1.959E-02				2.736E-02 2.736E-01 6.839E-04			
		TOTAL CONSTRUCTION						1.169 22.362 0.094				15.083 308.489 1.430				0.438 12.857 0.474			
		TOTAL PRODUCTION						0.095 0.947 0.029				0.86 8.60 0.15				0.03 0.33 0.01			
		TOTAL PROJECT						1.264 23.309 0.123				15.943 317.087 1.577				0.471 13.186 0.485			

Table 1b
Emission Calculation of Construction and Production Equipment

PROJECT PHASE	#	HP	Hr/Day	Total	Total	Capacity	PM-2.5				CO			
				Days	Hours	Factor	(g/hp-hr)	(lbs/hr)	(lbs/day)	(tons)	(g/hp-hr)	(lbs/hr)	(lbs/day)	(tons)
Site Prep (Ref: Table 2.3.2-1)														
Grader	1	140	10	3	30	41%	0.284	3.591E-02	3.591E-01	5.386E-04	3.621	4.578E-01	4.578E+00	6.867E-03
Roller	1	100	10	1	10	38%	0.228	1.908E-02	1.908E-01	9.542E-05	3.531	2.955E-01	2.955E+00	1.478E-03
Compactor	1	100	10	3	30	36%	0.272	2.157E-02	2.157E-01	3.235E-04	3.771	2.990E-01	2.990E+00	4.485E-03
TOTALS ==>							7.656E-02	7.656E-01	9.575E-04		1.052E+00	1.052E+01	1.283E-02	
Drilling (Ref Table 2.3.3-1)														
Fork Lift	1	50	8	7	56	20%	0.331	7.291E-03	5.833E-02	2.041E-04	5.706	1.257E-01	1.005E+00	3.519E-03
Drill Rig Motor # 1 (Electric)	1	1600	0	0	0	0%	0.000	0.000E+00	0.000E+00	0.000E+00	0.000	0.000E+00	0.000E+00	0.000E+00
Mud Pump Motor #2 (Electric)	1	1600	0	0	0	0%	0.000	0.000E+00	0.000E+00	0.000E+00	0.000	0.000E+00	0.000E+00	0.000E+00
Power Generator	2	1350	24	7	336	50%	0.079	2.349E-01	5.638E+00	1.973E-02	1.082	3.217E+00	7.722E+01	2.703E-01
Small Generator	1	100	24	7	168	50%	0.170	1.872E-02	4.493E-01	1.573E-03	3.380	3.722E-01	8.934E+00	3.127E-02
TOTALS ==>							2.609E-01	6.146E+00	2.151E-02		3.715E+00	8.716E+01	3.050E-01	
Completion & Testing (Ref: Table 2.3.4-1)														
Completion Rig	1	350	10	3	30	50%	0.067	2.583E-02	2.583E-01	3.874E-04	1.344	5.181E-01	5.181E+00	7.771E-03
Flare (Calculated in Table 2)	180	days							2.550E-01	2.295E-02			4.760E+00	4.284E-01
TOTALS ==>							2.583E-02	5.133E-01	2.334E-02		5.181E-01	9.941E+00	4.362E-01	
Equip. for Production Equip Install Phase (Ref: Table 2.3.5-1)														
Welding Truck	1	200	8	5	40	42%	0.083	1.536E-02	1.229E-01	3.071E-04	1.239	2.292E-01	1.834E+00	4.585E-03
Side Boom Crane	1	250	8	5	40	20%	0.173	1.905E-02	1.524E-01	3.811E-04	1.790	1.971E-01	1.577E+00	3.943E-03
TOTALS ==>							1.905E-02	1.524E-01	3.811E-04		1.971E-01	1.577E+00	3.943E-03	
Equip for Prod Phase (Ref: Table 2.3.5-2)														
Pumping Unit (IC Engine)	1	15	10	365	3,650	50%	0.307	5.072E-03	5.072E-02	9.256E-03	5.504	9.093E-02	9.093E-01	1.659E-01
Workover Rig (every 3 yrs)	1	345	10	2	20	50%	0.067	2.546E-02	2.546E-01	2.546E-04	1.344	5.107E-01	5.107E+00	5.107E-03
TOTALS ==>							3.053E-02	3.053E-01	9.510E-03		6.016E-01	6.016E+00	1.710E-01	
Plugging & Abandonment (Ref: Table 2.3.6-1)														
Production Rig (ICE)	1	345	10	5	50	50%	0.067	2.546E-02	2.546E-01	6.364E-04	1.344	5.107E-01	5.107E+00	1.277E-02
TOTALS ==>							2.546E-02	2.546E-01	6.364E-04		5.107E-01	5.107E+00	1.277E-02	
TOTAL CONSTRUCTION							0.408	7.831	0.047		5.994	114.305	0.771	
TOTAL PRODUCTION							0.031	0.305	0.010		0.60	6.02	0.17	
TOTAL PROJECT							0.438	8.137	0.056		6.595	120.321	0.942	

Table 1c
Calculation of Emissions From Construction Related Mobile Sources
(1.23E-02 Means 1.23 x 10⁻² or 0.0123)

	Trips/day	Duration (days)	RT Distance (miles)	ROG		NOx		PM-10		PM-2.5		CO		CO2	
				(lbs/day)	(tons/yr)	(lbs/day)	(tons/yr)	(lbs/day)	(tons/yr)	(lbs/day)	(tons/yr)	(lbs/day)	(tons/yr)	(lbs/day)	(tons/yr)
Pre-Activity Surveys (Ref: Table 2.3.1-1)															
Car/Pick-up Trucks (Kebo Land Dept.)	1	1	80	6.37E-04	3.18E-07	3.20E-03	1.60E-06	3.35E-04	1.67E-07	3.08E-04	9.82E-11	7.65E-02	1.22E-07	204.283	0.1021
Car/Pick-up Trucks (Biological Survey)	1	1	200	1.59E-03	7.96E-07	8.00E-03	4.00E-06	8.37E-04	4.19E-07	7.71E-04	6.14E-10	1.91E-01	7.65E-07	510.707	0.2554
Car/Pick-up Trucks (Cultural Resource Survey)	1	1	80	6.37E-04	3.18E-07	3.20E-03	1.60E-06	3.35E-04	1.67E-07	3.08E-04	9.82E-11	7.65E-02	1.22E-07	204.283	0.1021
Car/Pick-up Trucks (Geodetic Survey)	1	1	80	6.37E-04	3.18E-07	3.20E-03	1.60E-06	3.35E-04	1.67E-07	3.08E-04	9.82E-11	7.65E-02	1.22E-07	204.283	0.1021
SUBTOTALS				3.50E-03	1.75E-06	1.76E-02	8.80E-06	1.84E-03	9.21E-07	1.70E-03	9.08E-10	4.21E-01	1.13E-06	1123.556	0.5618
Site Prep (Ref: Table 2.3.2-1)															
Dump Truck	1	3	80	6.37E-04	9.55E-07	3.20E-03	4.80E-06	3.35E-04	5.02E-07	3.08E-04	9.82E-11	7.65E-02	1.22E-07	204.283	0.3064
Water Truck	1	3	80	2.21E-03	3.31E-06	2.66E-01	3.99E-04	9.76E-04	1.46E-06	9.34E-04	1.03E-09	2.76E-02	3.67E-06	204.283	0.3064
Passenger Car/ Pick-up	1	3	80	6.37E-04	9.55E-07	3.20E-03	4.80E-06	3.35E-04	5.02E-07	3.08E-04	9.82E-11	7.65E-02	1.22E-07	204.283	0.3064
Heavy Duty Trucks / Semi	1	2	80	2.21E-03	2.21E-06	2.66E-01	2.66E-04	9.76E-04	9.76E-07	9.34E-04	1.03E-09	2.76E-02	3.67E-06	204.283	0.2043
SUBTOTALS				5.69E-03	7.43E-06	5.38E-01	6.75E-04	2.62E-03	3.45E-06	2.48E-03	2.26E-09	2.08E-01	7.59E-06	817.131	1.1236
Drilling (Ref Table 2.3.3-1)															
Vacuum Truck	2	7	80	4.41E-03	1.54E-05	5.32E-01	1.86E-03	1.95E-03	6.83E-06	1.87E-03	4.12E-09	5.52E-02	1.47E-05	89.286	0.3125
Passenger Cars/Pick-Up Trucks	5	9	80	3.18E-03	1.43E-05	1.60E-02	7.20E-05	1.67E-03	7.53E-06	1.54E-03	2.45E-09	3.83E-01	3.06E-06	223.215	1.004
Heavy Duty Trucks (Normal Operations)	1	7	80	2.21E-03	7.72E-06	2.66E-01	9.31E-04	9.76E-04	3.42E-06	9.34E-04	1.03E-09	2.76E-02	3.67E-06	204.283	0.715
Heavy Duty Trucks (Mobilization/Demobilization)	56	2.5	80	1.24E-01	1.54E-04	1.49E+01	1.86E-02	5.47E-02	6.83E-05	5.23E-02	3.23E-06	1.55E+00	1.15E-02	11439.838	14.300
Heavy Duty Trucks (Haz Waste Disposal , if Necessary)	1	1	200	5.52E-03	2.76E-06	6.65E-01	3.33E-04	2.44E-03	1.22E-06	2.34E-03	6.44E-09	6.90E-02	2.30E-05	510.707	0.255
Heavy Duty Trucks (Fuel Delivery for Drill Rigs)	1	2	80	2.21E-03	2.21E-06	2.66E-01	2.66E-04	9.76E-04	9.76E-07	9.34E-04	1.03E-09	2.76E-02	3.67E-06	204.283	0.204
Heavy Duty Trucks (Surface Casing Cementing)	2	1	80	4.41E-03	2.21E-06	5.32E-01	2.66E-04	1.95E-03	9.76E-07	1.87E-03	4.12E-09	5.52E-02	1.47E-05	408.566	0.204
Heavy Duty Trucks (Production Casing Cementing))	2	1	80	4.41E-03	2.21E-06	5.32E-01	2.66E-04	1.95E-03	9.76E-07	1.87E-03	4.12E-09	5.52E-02	1.47E-05	408.566	0.204
SUBTOTALS				1.50E-01	2.01E-04	1.77E+01	2.26E-02	6.66E-02	9.03E-05	6.37E-02	3.26E-06	2.22E+00	1.16E-02	1.35E+04	1.72E+01
Completion & Testing (Ref: Table 2.3.4-1)															
Pickup Truck	1	180	80	6.37E-04	5.73E-05	3.20E-03	2.88E-04	3.35E-04	3.01E-05	3.08E-04	9.82E-11	7.65E-02	1.22E-07	44.643	4.018
Heavy Duty Trucks (Oil Transport)	1	130	80	2.21E-03	1.43E-04	2.66E-01	1.73E-02	9.76E-04	6.35E-05	9.34E-04	1.03E-09	2.76E-02	3.67E-06	204.283	13.278
SUBTOTALS				2.84E-03	2.01E-04	2.69E-01	1.76E-02	1.31E-03	9.36E-05	1.24E-03	1.13E-09	1.04E-01	3.79E-06	2.49E+02	1.73E+01
Equip. for Production Equip Install Phase (Ref: Table 2.3.5-1)															
Light Duty Car/Pickup Truck	5	5	80	3.18E-03	7.96E-06	1.60E-02	4.00E-05	1.67E-03	4.19E-06	1.54E-03	2.45E-09	3.83E-01	3.06E-06	223.215	0.558
Heavy Duty Trucks	3	5	80	6.62E-03	1.66E-05	7.98E-01	2.00E-03	2.93E-03	7.32E-06	2.80E-03	9.28E-09	8.28E-02	3.31E-05	612.848	1.532
SUBTOTALS				9.81E-03	2.45E-05	8.14E-01	2.04E-03	4.60E-03	1.15E-05	4.34E-03	1.17E-08	4.66E-01	3.61E-05	8.36E+02	2.09E+00
Equip for Prod Phase (Ref: Table 2.3.5-2)															
Pick-Up Truck	1	365	80	6.37E-04	1.16E-04	3.20E-03	5.84E-04	3.35E-04	6.11E-05	3.08E-04	9.82E-11	7.65E-02	1.22E-07	44.643	8.147
Pick-Up Truck (Workover Rig Every 3 yrs)	3	2	80	6.62E-03	6.62E-06	9.60E-03	9.60E-06	1.00E-03	1.00E-06	9.25E-04	3.06E-09	2.30E-01	1.10E-06	133.929	0.134
Heavy Duty Trucks (oil transport)	1	260	80	2.21E-03	2.87E-04	3.20E-03	4.16E-04	3.35E-04	4.35E-05	3.08E-04	3.40E-10	7.65E-02	1.22E-07		
SUBTOTALS				9.47E-03	4.10E-04	1.60E-02	1.01E-03	1.67E-03	1.06E-04	1.54E-03	3.50E-09	3.83E-01	1.35E-06	1.79E+02	8.28E+00
Plugging & Abandonment (Ref: Table 2.3.6-1)															
Passenger Car/ Pickup (Light Duty)	3	5	80	1.91E-03	4.78E-06	9.60E-03	2.40E-05	1.00E-03	2.51E-06	9.25E-04	8.84E-10	2.30E-01	1.10E-06	133.929	0.335
Heavy Duty Trucks (Normal Operations)	3	2	80	6.62E-03	6.62E-06	7.98E-01	7.98E-04	2.93E-03	2.93E-06	2.80E-03	9.28E-09	8.28E-02	3.31E-05	133.929	0.134
SUBTOTALS				8.53E-03	1.14E-05	8.08E-01	8.22E-04	3.93E-03	5.44E-06	3.73E-03	1.02E-08	3.12E-01	3.42E-05	133.929	0.134
TOTAL CONSTRUCTION EMISSIONS				0.1898	0.0009	20.1709	0.0448	0.0826	0.0003	0.0787	0.0000	4.1128	0.0117	16826.9207	46.6869
CALCULATIONS															
Daily (lbs/day) = $\frac{\text{Trips/day} \times \text{Round Trip Distance} \times \text{Emissions Factor (g/mile)}}{454 \text{ grams/lb}}$															
Annual (tons/yr) = $\frac{\text{Lbs/day} \times \text{Number of Days}}{2000 \text{ lbs/ton}}$															

Table 2

Evaluation of Flare Emissions

Flare (Testing Phase) 180 days per well

BASIS	Flare Size	50	mmbtu/day	
	Duration	180	days	
Total MMBTU Consumed		9,000	mmbtu	
	Emission Factor			
Pollutant	(lbs/mmbtu)	lbs/day	lbs total	tons total
NOx	0.0952	4.7600	856.8	0.4284
VOCs	0.0051	0.2550	45.9	0.0230
PM ³	0.1	5.0000	900.0	0.4500
CO	0.31	15.5000	2,790.0	1.3950
CO2	116.6	5832.2000	1,049,796.0	524.8980
Notes				
1. Emission factors for NOx and VOCs per SJVAPCD Rule 4311. CO from AP-42, Chap 13.5-2, Feb 2018				
2. Emission factors for CO ₂ from EPA GHG Emission Factors.				
3. Assumes flare will use BACT per SJVAPCD Permitting Requirements that require a minimum 98% destruction efficiency				

Table 3
Summary of GHG Emissions
(Refer to Tables 1 and 2 for Calculations)

Project Phase	CO ₂				CO ₂ (e)		
	1 Site + 1 Well				1 Site + 1 Well		
	Mobile (tons/yr)	Equipment (ton/yr)	Total (ton/yr)		Mobile (tons/yr)	Equipment (ton/yr)	Total (ton/yr)
Site Prep (Ref: Table 2.3.2-1)	1.12	1.66	2.78		1.12	1.67	2.79
Drilling (Ref Table 2.3.3-1)	17.20	289.48	306.68		17.26	290.46	307.72
Completion & Testing (Ref: Table 2.3.4-1)	17.30	527.63	544.93		17.36	529.42	546.78
Equip. for Production Equip Install Phase (Ref: Table 2.3.5-1)	2.09	1.04	3.13		2.10	1.04	3.14
Equip for Prod Phase (Ref: Table 2.3.5-2)	8.28	15.86	24.14		8.31	15.91	24.22
Plugging & Abandonment (Ref: Table 2.3.6-1)	0.13	4.49	4.62		0.13	4.51	4.64
TOTAL	46.12	840.16	886.28		46.28	843.01	889.29
Total Short-Term (construction) Emissions (per well)							865.07
Total Long-Term Emissions (per well)							24.22
TOTAL 1 Site + 1 Well							889.29
NOTES							
No. of Wells		1					
No. of Sites		1					
Ratio CO2 e/CO2 Diesel Combustion		1.0034	See Table 4				
Ratio CO2 e/CO2 Natural Gas Combustion		1.0005	See Table 4				

Table 4
Evaluation of GHG Emissions in Terms of CO₂ Equivalents (CO₂(e))
from Natural Gas and Diesel Combustion

Basis: 1 mmbtu of Natural Gas				
Pollutant	Emission Factor (kg/mmbtu)	Global Warming Potential (GWP)	kg	kg CO2(e)
CO2	53.02	1	265.1	265.1
CH4	0.001	21	0.005	0.105
N2O	0.0001	310	0.0001	0.031
			265.1	265.2
	Ratio CO2(e)/CO2			1.0005
Notes				
CO2 (e) - carbon dioxide equivalents				
CO2 (e) = kg/day x GWP				
Emission Factors from EPA 4 April 2014 "Emission Factors for GHG inventories."				

Basis: 1 mmbtu of Diesel and Petroleum Products				
Pollutant	Emission Factor (kg/mmbtu)	Global Warming Potential (GWP)	kg	kg CO2(e)
CO2	73.1	1	73.1	73.1
CH4	0.003	21	0.003	0.063
N2O	0.0006	310	0.0006	0.186
Totals			73.1	73.3
Ratio CO2(e)/CO2				1.0034
Notes				
CO2 (e) - carbon dioxide equivalents				
CO2 (e) = kg/day x GWP				
Emission Factors from EPA 4 April 2014 "Emission Factors for GHG inventories."				

Table 5
Estimate of Truck Idle Emissions

Drilling/Testing Related Truck Idling

Maximum Trucks/day	57	<i>trucks/day</i>
No. of Days	2.5	<i>days</i>
Total trucks	143	<i>trucks</i>
Idle Time per Truck	10.00	<i>min</i>
	0.1667	<i>hrs</i>
Total Idle Time	23.75	<i>hrs</i>
Emission Factor	0.09	<i>grams/idle hour</i>
Total DPM Emissions	2.14	<i>grams</i>
	0.0047	<i>lbs</i>

Production Related Truck Idling

HD Trucks/day	1	<i>trucks/day</i>
No. of Days	260	<i>days</i>
Total trucks	260	<i>trucks/yr</i>
Idle/Truck	10.00	<i>min/truck</i>
	0.1667	<i>hrs/truck</i>
Total Idle Time	43.33	<i>hrs</i>
Emission Factor	0.090300	<i>grams/idle hour</i>
Total DPM Emissions	3.91	<i>grams/yr</i>
	0.0086	<i>lbs/yr</i>

Idle Emission Factors

PM-10

2020	HHDT	DIESEL	SV	Annual	(g/veh-hr)
					0.090300

Table 6
Summary of Fugitive VOC Emissions from Production Equipment

	Organic Compounds EF		Organic Emissions
Equipment	How Many?	kg/hr/source	lbs/yr
Pumps	1	2.30E-05	0.4433
Flanges/Coni	4	7.50E-06	0.5782
Valves	2	7.80E-06	0.3006
TOTAL			1.0214
VOC Fugitive Emission Factor (EF) for heavy crude based on EPA Document # EPA-453/R-95-017, Nov. 1995, Table C-3. All organic emission are assumed to be volatile organic compounds (VOCs)			
(lbs/kg)			

Pollutant	EF (lbs/lb VOC)	Emissions (lbs/yr)
1,2,4 Trimethylbenzene	5.16E-03	5.27E-03
Benzene	1.32E-02	1.35E-02
Cyclohexane	4.82E-04	4.92E-04
Ethylbenzene	8.45E-03	8.63E-03
n-Hexane	1.49E-02	1.52E-02
Toluene	1.25E-02	1.28E-02
Xylenes	1.21E-02	1.24E-02
EFs from SJVAPCD recommended factors for oil and gas production.		
Calculation: lbs/yr = # of sources x EF (kg/hr/source) x 8,760 hrs x(2.2 lbs/kg)x(1ton/2,000 lbs)		

of Wells = 1

Short and Long-Term Risk Score Calculations

CAS#	Substance	Annual Emissions	Maximum Hourly	Average Hourly	Disp Adj Method Carc	EP Method Carc	EP Method Chronic	EP Method Acute	EP Max of Chronic and Acute	Disp Adj Method Chronic
79345	1,1,2,2-Tetrachloroethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
79005	1,1,2-Trichloroethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75343	1,1-Dichloroethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	1,2,3,4,5,6,78-OctaD			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	1,2,3,4,5,6,78-OctaF			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39001020	1,2,3,4,6,7,8,9-Octachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3268879	1,2,3,4,6,7,8,9-Octachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
67562394	1,2,3,4,6,7,8-Heptachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35822469	1,2,3,4,6,7,8-Heptachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
55673897	1,2,3,4,7,8,9-Heptachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
70648269	1,2,3,4,7,8-Hexachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39227286	1,2,3,4,7,8-Hexachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57117449	1,2,3,6,7,8-Hexachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57653857	1,2,3,6,7,8-Hexachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
72918219	1,2,3,7,8,9-Hexachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
19408743	1,2,3,7,8,9-Hexachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57117416	1,2,3,7,8-Pentachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40321764	1,2,3,7,8-Pentachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
96128	1,2-Dibromo-3-chloropropane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
78875	1,2-Dichloropropane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
122667	1,2-Diphenylhydrazine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106887	1,2-Epoxybutane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106990	1,3-Butadiene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
542756	1,3-Dichloropropene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1120714	1,3-Propane sultone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
123911	1,4-Dioxane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42397648	1,6-Dinitropyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42397659	1,8-Dinitropyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5522430	1-Nitropyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

39635319	2,3,3',4,4',5,5'- HEPTACHLOROBIPHENYL (PCB 189)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38380084	2,3,3',4,4',5- HEXACHLOROBIPHENYL (PCB 156)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
69782907	2,3,3',4,4',5'- HEXACHLOROBIPHENYL (PCB 157)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32598144	2,3,3',4,4'-Pentachlorobiphenyl {PCB 105}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
52663726	2,3',4,4',5,5'- HEXACHLOROBIPHENYL (PCB 167)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
74472370	2,3,4,4',5- PENTACHLOROBIPHENYL (PCB114)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
31508006	2,3',4,4',5- PENTACHLOROBIPHENYL (PCB 118)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
65510443	2,3',4,4',5'- PENTACHOROBIPHENYL (PCB 123)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
60851345	2,3,4,6,7,8-Hexachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57117314	2,3,4,7,8-Pentachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
51207319	2,3,7,8-Tetrachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1746016	2,3,7,8-Tetrachlorodibenzo-P- Dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
88062	2,4,6-Trichlorophenol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
615054	2,4-Diaminoanisole			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95807	2,4-Diaminotoluene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
121142	2,4-Dinitrotoluene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
53963	2-Acetylaminofluorene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
117793	2-Aminoanthraquinone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
607578	2-Nitrofluorene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32774166	3,3',4,4',5,5'- HEXACHLOROBIPHENYL (PCB 169)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57465288	3,3',4,4',5- PENTACHLOROBIPHENYL (PCB 126)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

32598133	3,3',4,4'- TETRACHLOROBIPHENYL (PCB77)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
91941	3,3'-Dichlorobenzidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
70362504	3,4,4',5- TETRACHLOROBIPHENYL (PCB 81)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
56495	3-Methylcholanthrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
101144	4,4'-Methylene bis(2 Chloroaniline) (MOCA)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
101779	4,4'-Methylenedianiline			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
92671	4-Aminobiphenyl			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95830	4-Chloro-o-phenylenediamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
60117	4-Dimethylaminoazobenzene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57835924	4-Nitropyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3697243	5-Methylchrysene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
602879	5-Nitroacenaphthene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7496028	6-Nitrochrysene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57976	7,12-Dimethylbenz[a]anthracene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
194592	7H-Dibenzo[c,g]carbazole			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75070	Acetaldehyde			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
60355	Acetamide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107028	Acrolein			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
79061	Acrylamide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
79107	Acrylic acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107131	Acrylonitrile			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107051	Allyl chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
319846	alpha-Hexachlorocyclohexane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
61825	Amitrole			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7664417	Ammonia			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
62533	Aniline			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440382	Arsenic			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1016	Arsenic compounds (inorganic)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7784421	Arsine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1332214	Asbestos			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10294403	Barium chromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
56553	Benz[a]anthracene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
71432	Benzene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
92875	Benzidine (and its salts)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1020	Benzidine-based dyes			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
50328	Benzo[a]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
205992	Benzo[b]fluoranthene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
205823	Benzo[j]fluoranthene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

207089	Benzo[k]fluoranthene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
100447	Benzyl chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440417	Beryllium			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
319857	beta-Hexachlorocyclohexane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57578	beta-Propiolactone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
111444	Bis(2-chloroethyl) ether {DCEE}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
542881	Bis(chloromethyl) ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440439	Cadmium			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13765190	Calcium chromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2425061	Captafol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
133062	Captan			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75150	Carbon disulfide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
630080	Carbon monoxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
56235	Carbon tetrachloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57749	Chlordane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108171262	Chlorinated paraffin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7782505	Chlorine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10049044	Chlorine dioxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108907	Chlorobenzene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
510156	Chlorobenzilate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	Chlorodifluoromethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
67663	Chloroform			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107302	Chloromethyl methyl			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
76062	Chloropicrin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1333820	Chromium trioxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
18540299	Chromium, hexavalent			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
218019	Chrysene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1066	Coke oven emissions			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440508	Copper			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1319773	acid}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
135206	Cupferron			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1073	Cyanide compounds			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	CYANIDE COMPOUNDS									
57125	[Inorganic)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
117817	Di(2-ethylhexyl) phthalate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
226368	Dibenz[a,h]acridine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2263680	Dibenz[a,h]acridine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
53703	Dibenz[a,h]anthracene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
224420	Dibenz[a,j]acridine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
192645	Dibenzo[a,e]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
189640	Dibenzo[a,h]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
189559	Dibenzo[a,i]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
191300	Dibenzo[a,l]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

	Dibenzofurans (chlorinated) {PCDFs} [Treated as 2378TCDD for HRA]			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1080	Dichlorodifluoromethene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	Dichlorodiphenyldichloroethylene {DDE}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
72559	Dichloroethylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
73354	Dichlorovos {DDVP}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
62737	Diesel engine exhaust, particulate matter (Diesel PM)	1.117E+02		6.71E-02	9.38E-01	5.70E+01	2.01E+00	0.00E+00	2.01E+00	3.36E-02
9901	Diethanolamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
111422	Dimethyl carbamoyl chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
79447	Dimethyl formamide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
68122	Dimethylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
124403	Dioxins, total, w/o individ. isomers reported {PCDDs} [Treat as 2378TCDD for HRA]			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1086	Direct Black 38			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1937377	Direct Blue 6			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2602462	Direct Brown 95 (technical grade)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
16071866	Epichlorohydrin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106898	Ethyl benzene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
100414	Ethyl chloride {Chlorethane}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75003	Ethylene dibromide {EDB}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106934	Ethylene dichloride {EDC}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107062	Ethylene glycol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107211	Ethylene glycol monobutyl ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
111762	Ethylene glycol monoethyl ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
110805	Ethylene glycol monoethyl ether acetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
111159	Ethylene glycol monomethyl ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
109864	Ethylene glycol monomethyl ether acetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
110496	Ethylene oxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75218	Ethylene thiourea			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
96457	Ethyleneimine {Aziridine}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
151564	Fluorides			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1101	Formaldehyde			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
50000	Glutaraldehyde			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
111308	Heptachlor			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
76448	Hexachlorobenzene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
118741	Hexachlorocyclohexane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1120										

Annual Diesel
Particulate
Emissions

608731	Hexachlorocyclohexanes (mixed or technical grade)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
67721	Hexachloroethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
110543	Hexane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
302012	Hydrazine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7647010	Hydrochloric acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
74908	Hydrocyanic acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7664393	Hydrogen fluoride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7783075	Hydrogen Selenide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7783075	HYDROGEN SELENIDE			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7783064	Hydrogen sulfide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
193395	Indeno[1,2,3-cd]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
78591	Isophorone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
67630	Isopropyl alcohol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7439921	Lead			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
301042	Lead acetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7758976	Lead chromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1128	Lead compounds (inorganic)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7446277	Lead phosphate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1335326	Lead subacetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
58899	Lindane {gamma-Hexachlorocyclohexane}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108316	Maleic anhydride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7439965	Manganese			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108394	m-Cresol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7487947	Mercuric chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7439976	Mercury			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
67561	Methanol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
74839	Methyl bromide {Bromomethane}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
71556	Methyl chloroform {1,1,1-Trichloroethane}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
78933	Methyl ethyl ketone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
624839	Methyl isocyanate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1634044	Methyl tert-butyl ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75092	Methylene chloride {Dichloromethane}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
101688	Methylene diphenyl diisocyanate {MDI}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
90948	Michler's ketone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108383	m-Xylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
91203	Naphthalene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440020	Nickel			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
373024	Nickel acetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

3333673	Nickel carbonate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3333393	Nickel carbonate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13463393	Nickel carbonyl			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
12054487	Nickel hydroxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1313991	Nickel oxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1146	Nickel refinery dust			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
12035722	Nickel subsulfide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1271289	Nickelocene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7697372	Nitric acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
139139	Nitrilotriacetic acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10102440	NITROGEN DIOXIDE			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1116547	N-Nitrosodiethanolamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
55185	N-Nitrosodiethylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
62759	N-Nitrosodimethylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
924163	N-Nitrosodi-n-butylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
621647	N-Nitrosodi-n-propylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
86306	N-Nitrosodiphenylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10595956	N-Nitrosomethylethylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
59892	N-Nitrosomorpholine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
684935	N-Nitroso-N-methylurea			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
100754	N-Nitrosopiperidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
930552	N-Nitrosopyrrolidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
90040	o-Anisidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95487	o-Cresol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8014957	OLEUM			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95534	o-Toluidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95476	o-Xylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10028156	OZONE			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1151	PAHs, total, w/o individ. components reported [Treated as B(a)P for HRA]			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1336363	PCBs {Polychlorinated biphenyls}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95692	p-Chloro-o-toluidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
120718	p-Cresidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106445	p-Cresol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106467	p-Dichlorobenzene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
87865	Pentachlorophenol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
127184	Perchloroethylene {Tetrachloroethene}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108952	Phenol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75445	Phosgene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7803512	Phosphine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7664382	Phosphoric acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

85449	Phthalic anhydride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
156105	p-Nitrosodiphenylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7758012	Potassium bromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
115071	Propylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107982	Propylene glycol monomethyl ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75569	Propylene oxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75569	Propylene oxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106423	p-Xylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
50555	Reserpine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7782492	Selenium			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7446346	Selenium sulfide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1175	Silica, crystalline			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7631869	Silica, crystalline			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10588019	Sodium dichromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1310732	Sodium hydroxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7789062	Strontium chromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
100425	Styrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9960	Sulfates			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9960	SULFATES			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7446095	Sulfur Dioxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7446719	Sulfur Trioxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7664939	Sulfuric acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	Tetrachlorophenols			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
62555	Thioacetamide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
62566	Thiourea			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108883	Toluene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1204	Toluene diisocyanate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
26471625	TOLUENE DIISOCYANATE			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
584849	Toluene-2,4-diisocyanate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
91087	Toluene-2,6-diisocyanate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8001352	Toxaphene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
79016	Trichloroethylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	Trichlororfluormethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	Trichlorotrifluormethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
121448	Triethylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
51796	Urethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440622	Vanadium (fume or dust)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1314621	VANADIUM PENTOXIDE			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108054	Vinyl acetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75014	Vinyl chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75354	Vinylidene chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1330207	XYLENES (mixed xylenes)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Air Toxics "Hot Spots" Information and Assessment Act of 1987 Facility Prioritization Scores Prioritization 2.0 SJVAPCD																																																																																																																																									
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Applicability Use this spreadsheet to generate a Prioritization when emission rates of HAPs are known. Entries required in yellow areas, output in grey areas.																																																																																																																																									
Author or updater R Kapahi Last Update January 15, 2015																																																																																																																																									
Facility: Kebo Oil & Gas ID#: Long-Term Risk Project #: DPM + Organic Emissions Data Entered by: Ray Kapahi (Environmental Permitting Specialists) Data Reviewed by: Location Operating hrs/year do not affect cancer risk score.																																																																																																																																									
<div style="border: 1px solid red; padding: 5px; color: red; display: inline-block;"> Long-Term Risk Score 1 mile (1,600 m) from site </div>																																																																																																																																									
<table border="1" style="width: 100%;"> <tr> <td rowspan="2">Inputs</td> <td>Operating Hours hr/yr</td> <td>Release Height (m)</td> </tr> <tr> <td>8760</td> <td>5</td> </tr> </table>										Inputs	Operating Hours hr/yr	Release Height (m)	8760	5																																																																																																																											
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CAS#	Substance	Annual Emissions	Maximum Hourly	Average Hourly	Disp Adj Method Carc	EP Method Carc	EP Method Chronic	EP Method Acute	EP Max of Chronic and Acute	Disp Adj Method Chronic
79345	1,1,2,2-Tetrachloroethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
79005	1,1,2-Trichloroethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75343	1,1-Dichloroethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	1,2,3,4,5,6,78-OctaD			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	1,2,3,4,5,6,78-OctaF			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39001020	1,2,3,4,6,7,8,9-Octachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3268879	1,2,3,4,6,7,8,9-Octachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
67562394	1,2,3,4,6,7,8-Heptachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
35822469	1,2,3,4,6,7,8-Heptachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
55673897	1,2,3,4,7,8,9-Heptachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
70648269	1,2,3,4,7,8-Hexachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
39227286	1,2,3,4,7,8-Hexachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57117449	1,2,3,6,7,8-Hexachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57653857	1,2,3,6,7,8-Hexachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
72918219	1,2,3,7,8,9-Hexachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
19408743	1,2,3,7,8,9-Hexachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57117416	1,2,3,7,8-Pentachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
40321764	1,2,3,7,8-Pentachlorodibenzo-P-dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
96128	1,2-Dibromo-3-chloropropane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
78875	1,2-Dichloropropane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
122667	1,2-Diphenylhydrazine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106887	1,2-Epoxybutane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106990	1,3-Butadiene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
542756	1,3-Dichloropropene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1120714	1,3-Propane sultone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
123911	1,4-Dioxane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42397648	1,6-Dinitropyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
42397659	1,8-Dinitropyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
5522430	1-Nitropyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

39635319	2,3,3',4,4',5,5'-HEPTACHLOROBIPHENYL (PCB 189)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
38380084	2,3,3',4,4',5-HEXACHLOROBIPHENYL (PCB 156)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
69782907	2,3,3',4,4',5'-HEXACHLOROBIPHENYL (PCB 157)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32598144	2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
52663726	2,3',4,4',5,5'-HEXACHLOROBIPHENYL (PCB 167)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
74472370	2,3,4,4',5-PENTACHLOBIPHENYL (PCB114)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
31508006	2,3',4,4',5-PENTACHLOROBIPHENYL (PCB 118)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
65510443	2,3',4,4',5'-PENTACHOROBIPHENYL (PCB 123)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
60851345	2,3,4,6,7,8-Hexachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57117314	2,3,4,7,8-Pentachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
51207319	2,3,7,8-Tetrachlorodibenzofuran			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1746016	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
88062	2,4,6-Trichlorophenol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
615054	2,4-Diaminoanisoie			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95807	2,4-Diaminotoluene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
121142	2,4-Dinitrotoluene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
53963	2-Acetylaminofluorene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
117793	2-Aminoanthraquinone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
607578	2-Nitrofluorene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
32774166	3,3',4,4',5,5'-HEXACHLOROBIPHENYL (PCB 169)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57465288	3,3',4,4',5-PENTACHLOROBIPHENYL (PCB 126)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

32598133	3,3',4,4'- TETRACHLOROBIPHENYL (PCB77)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
91941	3,3'-Dichlorobenzidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
70362504	3,4,4',5- TETRACHLOROBIPHENYL (PCB 81)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
56495	3-Methylcholanthrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
101144	4,4'-Methylene bis(2 Chloroaniline) (MOCA)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
101779	4,4'-Methylenedianiline			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
92671	4-Aminobiphenyl			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95830	4-Chloro-o-phenylenediamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
60117	4-Dimethylaminoazobenzene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57835924	4-Nitropyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3697243	5-Methylchrysene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
602879	5-Nitroacenaphthene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7496028	6-Nitrochrysene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57976	7,12-Dimethylbenz[a]anthracene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
194592	7H-Dibenzo[c,g]carbazole			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75070	Acetaldehyde			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
60355	Acetamide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107028	Acrolein			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
79061	Acrylamide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
79107	Acrylic acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107131	Acrylonitrile			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107051	Allyl chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
319846	alpha-Hexachlorocyclohexane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
61825	Amitrole			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7664417	Ammonia			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
62533	Aniline			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440382	Arsenic			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1016	Arsenic compounds (inorganic)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7784421	Arsine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1332214	Asbestos			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10294403	Barium chromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
56553	Benz[a]anthracene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
71432	Benzene	1.35E-02	1.00E-02	1.54E-06	1.10E-05	6.66E-04	3.85E-06	1.15E-02	1.15E-02	6.42E-08
92875	Benzidine (and its salts)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1020	Benzidine-based dyes			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
50328	Benzo[a]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
205992	Benzo[b]fluoranthene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
205823	Benzo[j]fluoranthene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

207089	Benzo[k]fluoranthene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
100447	Benzyl chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440417	Beryllium			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
319857	beta-Hexachlorocyclohexane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57578	beta-Propiolactone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
111444	Bis(2-chloroethyl) ether {DCEE}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
542881	Bis(chloromethyl) ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440439	Cadmium			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13765190	Calcium chromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2425061	Captafol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
133062	Captan			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75150	Carbon disulfide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
630080	Carbon monoxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
56235	Carbon tetrachloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
57749	Chlordane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108171262	Chlorinated paraffin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7782505	Chlorine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10049044	Chlorine dioxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108907	Chlorobenzene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
510156	Chlorobenzilate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	Chlorodifluoromethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
67663	Chloroform			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107302	Chloromethyl methyl			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
76062	Chloropicrin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1333820	Chromium trioxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
18540299	Chromium, hexavalent			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
218019	Chrysene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1066	Coke oven emissions			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440508	Copper			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1319773	acid}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
135206	Cupferron			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1073	Cyanide compounds			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	CYANIDE COMPOUNDS									
57125	[Inorganic)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
117817	Di(2-ethylhexyl) phthalate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
226368	Dibenz[a,h]acridine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2263680	Dibenz[a,h]acridine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
53703	Dibenz[a,h]anthracene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
224420	Dibenz[a,j]acridine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
192645	Dibenzo[a,e]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
189640	Dibenzo[a,h]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
189559	Dibenzo[a,i]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
191300	Dibenzo[a,l]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

1080	Dibenzofurans (chlorinated) {PCDFs} [Treated as 2378TCDD for HRA]			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	Dichlorodifluoromethene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
72559	Dichlorodiphenyldichloroethylene {DDE}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
73354	Dichloroethylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
62737	Dichlorovos {DDVP}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9901	Diesel engine exhaust, particulate matter (Diesel PM)	2.06E+01		2.35E-03	1.73E-01	1.05E+01	7.06E-02	0.00E+00	7.06E-02	1.18E-03
111422	Diethanolamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
79447	Dimethyl carbamoyl chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
68122	Dimethyl formamide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
124403	Dimethylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1086	Dioxins, total, w/o individ. isomers reported {PCDDs} [Treat as 2378TCDD for HRA]			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1937377	Direct Black 38			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2602462	Direct Blue 6			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
16071866	Direct Brown 95 (technical grade)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106898	Epichlorohydrin			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
100414	Ethyl benzene	8.63E-03	1.00E-03	9.85E-07	6.04E-07	3.67E-05	7.39E-08	0.00E+00	7.39E-08	1.23E-09
75003	Ethyl chloride {Chlorethane}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106934	Ethylene dibromide {EDB}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107062	Ethylene dichloride {EDC}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107211	Ethylene glycol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
111762	Ethylene glycol monobutyl ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
110805	Ethylene glycol monoethyl ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
111159	Ethylene glycol monoethyl ether acetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
109864	Ethylene glycol monomethyl ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
110496	Ethylene glycol monomethyl ether acetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75218	Ethylene oxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
96457	Ethylene thiourea			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
151564	Ethyleneimine {Aziridine}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1101	Fluorides			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
50000	Formaldehyde			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
111308	Glutaraldehyde			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
76448	Heptachlor			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
118741	Hexachlorobenzene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1120	Hexachlorocyclohexane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

608731	Hexachlorocyclohexanes (mixed or technical grade)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
67721	Hexachloroethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
110543	Hexane	1.52E-02	1.00E-03	1.74E-06	0.00E+00	0.00E+00	3.72E-08	0.00E+00	3.72E-08	6.20E-10
302012	Hydrazine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7647010	Hydrochloric acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
74908	Hydrocyanic acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7664393	Hydrogen fluoride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7783075	Hydrogen Selenide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7783075	HYDROGEN SELENIDE			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7783064	Hydrogen sulfide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
193395	Indeno[1,2,3-cd]pyrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
78591	Isophorone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
67630	Isopropyl alcohol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7439921	Lead			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
301042	Lead acetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7758976	Lead chromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1128	Lead compounds (inorganic)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7446277	Lead phosphate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1335326	Lead subacetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
58899	Lindane {gamma-Hexachlorocyclohexane}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108316	Maleic anhydride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7439965	Manganese			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108394	m-Cresol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7487947	Mercuric chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7439976	Mercury			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
67561	Methanol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
74839	Methyl bromide {Bromomethane}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
71556	Methyl chloroform {1,1,1-Trichloroethane}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
78933	Methyl ethyl ketone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
624839	Methyl isocyanate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1634044	Methyl tert-butyl ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75092	Methylene chloride {Dichloromethane}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
101688	Methylene diphenyl diisocyanate {MDI}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
90948	Michler's ketone			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108383	m-Xylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
91203	Naphthalene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440020	Nickel			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
373024	Nickel acetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

3333673	Nickel carbonate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3333393	Nickel carbonate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
13463393	Nickel carbonyl			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
12054487	Nickel hydroxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1313991	Nickel oxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1146	Nickel refinery dust			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
12035722	Nickel subsulfide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1271289	Nickelocene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7697372	Nitric acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
139139	Nitrilotriacetic acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10102440	NITROGEN DIOXIDE			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1116547	N-Nitrosodiethanolamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
55185	N-Nitrosodiethylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
62759	N-Nitrosodimethylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
924163	N-Nitrosodi-n-butylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
621647	N-Nitrosodi-n-propylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
86306	N-Nitrosodiphenylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10595956	N-Nitrosomethylethylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
59892	N-Nitrosomorpholine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
684935	N-Nitroso-N-methylurea			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
100754	N-Nitrosopiperidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
930552	N-Nitrosopyrrolidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
90040	o-Anisidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95487	o-Cresol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8014957	OLEUM			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95534	o-Toluidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95476	o-Xylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10028156	OZONE			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1151	PAHs, total, w/o individ. components reported [Treated as B(a)P for HRA]			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1336363	PCBs {Polychlorinated biphenyls}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
95692	p-Chloro-o-toluidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
120718	p-Cresidine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106445	p-Cresol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106467	p-Dichlorobenzene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
87865	Pentachlorophenol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
127184	Perchloroethylene {Tetrachloroethene}			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108952	Phenol			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75445	Phosgene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7803512	Phosphine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7664382	Phosphoric acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

85449	Phthalic anhydride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
156105	p-Nitrosodiphenylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7758012	Potassium bromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
115071	Propylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
107982	Propylene glycol monomethyl ether			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75569	Propylene oxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75569	Propylene oxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
106423	p-Xylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
50555	Reserpine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7782492	Selenium			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7446346	Selenium sulfide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1175	Silica, crystalline			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7631869	Silica, crystalline			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
10588019	Sodium dichromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1310732	Sodium hydroxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7789062	Strontium chromate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
100425	Styrene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9960	Sulfates			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
9960	SULFATES			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7446095	Sulfur Dioxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7446719	Sulfur Trioxide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7664939	Sulfuric acid			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	Tetrachlorophenols			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
62555	Thioacetamide			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
62566	Thiourea			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108883	Toluene	1.28E-02	1.00E-03	1.46E-06	0.00E+00	0.00E+00	7.31E-07	4.05E-05	4.05E-05	1.22E-08
1204	Toluene diisocyanate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
26471625	TOLUENE DIISOCYANATE			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
584849	Toluene-2,4-diisocyanate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
91087	Toluene-2,6-diisocyanate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
8001352	Toxaphene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
79016	Trichloroethylene			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	Trichlororfluormethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
0	Trichlorotrifluormethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
121448	Triethylamine			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
51796	Urethane			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
7440622	Vanadium (fume or dust)			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1314621	VANADIUM PENTOXIDE			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
108054	Vinyl acetate			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75014	Vinyl chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
75354	Vinylidene chloride			0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1330207	XYLENES (mixed xylenes)	1.24E-02	1.00E-03	1.42E-06	0.00E+00	0.00E+00	3.03E-07	6.82E-05	6.82E-05	5.06E-09

APPENDIX C

**Biological Assessment
KEBO Oil and Gas, Inc.
CRPC et. al. #B-1
Exploratory Well Project
Tulare County, California**

Prepared for:

**KEBO Oil and Gas, Inc.
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Portland, TX 78374
Contact: Ken Boester
(210) 218-1781**

Prepared by:

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November 2019

INTRODUCTION

KEBO Oil and Gas, Inc. (KEBO) is proposing to drill one (1) exploratory oil and gas well, the CRPC et. al. B #1 (Project). The Project includes the construction of a well pad, measuring 250 feet by 150 feet; the construction of a new access road, measuring 100 feet by 14 feet; and widening of an existing access road to a 14 foot width for access to the well site. If economical quantities of oil and gas are discovered in the proposed well, KEBO would install the necessary production equipment on the well site. No well stimulation, including hydraulic fracturing or enhanced oil recovery techniques are proposed as part of this Project. KEBO anticipates commencing Project activities in 2019 and completing all drilling activities in 2019. If the well is non-commercial, the well will be plugged and abandoned, and the disturbed land will be restored to the same conditions as existed prior to construction of the Project.

KEBO retained the services of Booher Consulting, LLC to conduct biological surveys for the proposed Project, for submittal to the State of California, Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR). Booher Consulting, LLC conducted biological surveys of the proposed well site, access roads, and buffer areas to identify known or potential habitat for special-status wildlife and plant species on August 6, 2019 and September 20, 2019. This report presents the results of biological surveys and includes recommendations for avoidance and minimization measures that will be implemented as operational procedures during the proposed Project to avoid or minimize potential impacts to sensitive wildlife and plant species.

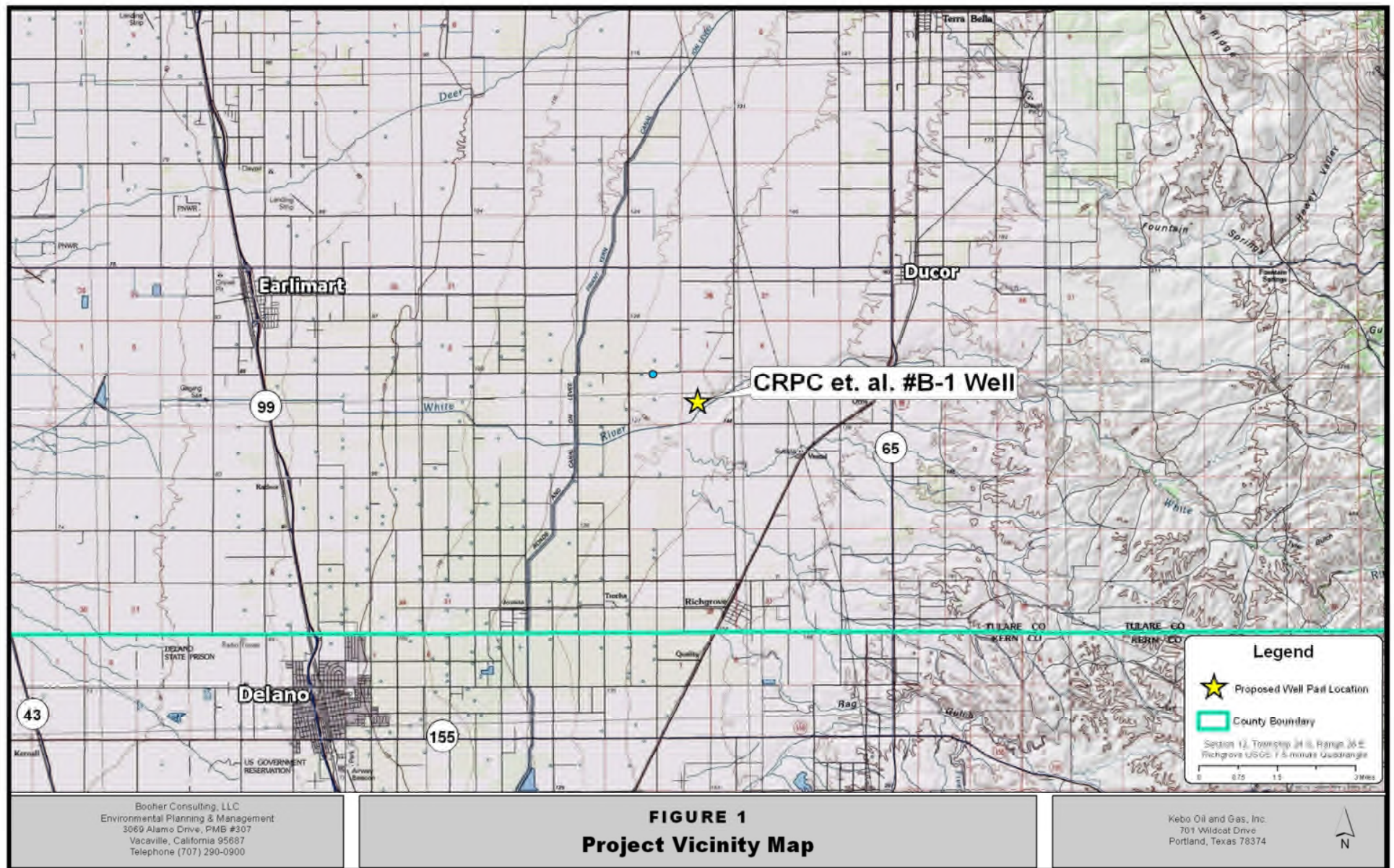
PROJECT LOCATION AND ENVIRONMENTAL SETTING

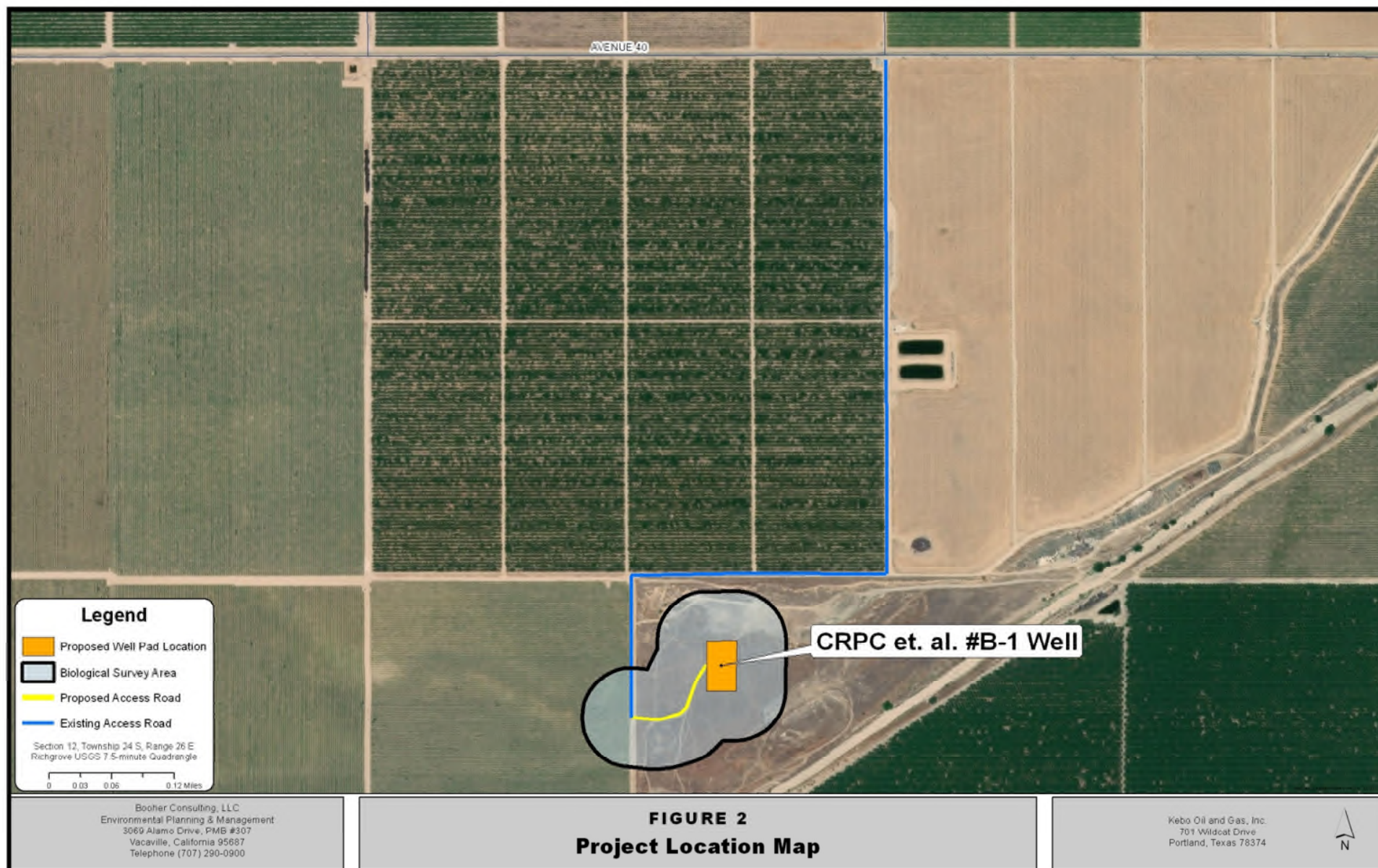
The proposed Project site is located in the southeastern San Joaquin Valley, in Tulare County approximately 3.5 miles north of Richgrove, California (see Figure 1). The proposed CRPC et. al., #B-1 well will be located in Section 12, Township 24 South, Range 26 East, MDBM, within the Richgrove U.S. Geological Survey (USGS) 7.5-minute quadrangle (see Figure 2).

The Project is proposed within the former Richgrove Landfill site, which has since been abandoned. Trespass dumping continues to occur, based on presence of trash and debris. The areas surrounding the proposed Project site are primarily agricultural. Cherry orchards were observed to the north, vineyards were present the west of the proposed Project site, and almonds were present to the south and east. South from Avenue 40, unpaved access roads currently used for agriculture provide access to the proposed Project site.

The White River occurs 0.12 miles south of the proposed Project site, and runs in a northeast/southwest direction. This feature lacked water when biological surveys were conducted. No wetlands, streams, or rivers are present within the boundaries of the proposed Project site.

The proposed Project is designated as Valley Agriculture (Rural Lands Plan) within the Tulare County General Plan. Consistent with the Tulare County General Plan Framework Concept 4: Natural and Cultural Resources of the Tulare County General Plan (Tulare County 2012), the County will ensure that development occurs in a manner that limits impacts to natural and cultural





resources through the implementation of its Goals and Policies and through proper site planning and design techniques.

PROJECT DESCRIPTION

KEBO is proposing to drill one (1) exploratory oil and gas well, the CRPC et. al. #B-1, to a depth not to exceed 5,000' TVD subsurface (Project). The Project includes the construction of a well pad, measuring 250 feet by 150 feet (0.86 acres); the construction of a new access road, measuring 100 feet by 14 feet (0.03 acres); and widening of an existing access road to a 14 foot width (0.02 acres) for access to the well site. If economical quantities of oil and gas are discovered in the proposed well, KEBO would install the necessary production equipment on the well site, as described below under the production phase section. No well stimulation, including hydraulic fracturing, or enhanced oil recovery techniques are proposed as part of this Project. KEBO anticipates commencing Project activities in 2020 and completing all drilling activities in 2020. If the well is non-commercial, the well will be plugged and abandoned, the disturbed land will be restored to substantially the same conditions as existed prior to construction of the Project.

Pre-activity Survey

Prior to any ground disturbing activities, KEBO will conduct various tasks including on site meetings with the property owners, biological surveys, cultural resource surveys, and geodetic surveys of the proposed Project site. Mobile emission sources associated with pre-activity surveys are presented in the Initial Study/Mitigated Negative Declaration (IS/MND) for the Project.

The proposed Project includes the following phases, which would be completed during 2020: a site preparation phase, a drilling phase, a completion and testing phase and, if deemed productive, an installation of production equipment phase, a production phase, and a plugging and abandonment phase. If the well is non-commercial, the well will be plugged and abandoned, the disturbed land will be restored to substantially the same conditions as existed prior to construction of the Project. If the well is commercial productive, the production phase may extend beyond 2019. The estimated average life of a well is eight (8) years. Although there is potential that the well will not be commercially productive, to ensure a complete analysis, this Project description assumes the well would become a producing well in order to fully analyze the potential effects of the proposed Project. A detailed description of each phase is presented below.

Site Preparation Phase

During site preparation activities, the proposed Project site would be graded, watered and compacted to establish a level and solid foundation for the drilling rig. Written notification shall be given to the San Joaquin Valley Air Pollution Control District (SJVAPCD) at least 48 hours prior to beginning earthmoving operations. Construction personnel would be notified prior to ground disturbing activities of the possibility of buried prehistoric or historic cultural or paleontological deposits and endangered species concerns. Earthmoving activities for the Project would not exceed a combined total disturbance of five (5.0) acres per day, nor involve

movement, deposition, or relocation of more than 2,500 cubic yards per day of bulk materials on any three (3) or more days.

A well pad would be constructed, measuring approximately 150 feet by 250 feet (0.86 acres). A new access road, measuring 100 feet by 14 feet (0.03 acres) will be constructed for the Project. The new segment of road will be constructed between an existing farm road and an existing road that bisects the parcel. The existing road, measuring 440 feet in length by 12 feet, will be widened to a 14 foot width (0.02 acres) for access to the well site. A total of 0.91 acres of disturbance will result from site preparation.

KEBO proposes to use a closed loop system for the drilling process. All drilling mud and cuttings would be contained in above ground tanks and transported offsite for disposal. According to the California Oil and Gas Fields, Volume 1 – Central California Report (1998), the base of fresh water in the Jasmin Oil Field (closest oil field to the proposed Project site) is at a depth of 2,750 feet. Equipment planned for site preparation activities is presented in the IS/MND for the Project.

Site preparation activities would require approximately 500 bbls of water (2,100 gallons) for the proposed Project site. Water will be obtained from a local farmer which is just east of the location. Completing site preparation activities would require approximately three (3) days for the proposed Project site. Approximately four (4) personnel would be on site at any given time during the site preparation phase.

Drilling Phase

The drilling phase for the proposed Project would last a total of approximately 10 and one half (10 ½) days. The drilling phase would consist of 2 and one half (2 ½) days for mobilization and demobilization of the drill rig, and seven (7) days for drilling various tasks associated with the drilling phase including installation of blowout prevention equipment, cementing, mud-logging, etc. Approximately one (1) day when various evaluation tasks are being done, the drill rig motors would be idle or not running.

Drilling equipment mobilization and demobilization would require a maximum number of 28 round trip vehicle trips. The project would use Ensign Rig 531 and the drill rig is approximately 70 feet in height. This drill rig is registered in the California Portable Emission Registration Program. Temporary facilities, equipment and materials necessary for the drilling operation would be set up and stored on site (i.e., drilling mud supplies, water, drilling materials and casing, crew support trailers, pumps and piping, portable generators, fuels and lubricants, etc.). Equipment required during the drilling phase is listed in the IS/MND for the Project.

Night lighting would be used only during the drilling phase. However, to the greatest extent possible, night lighting would be directed inward and down to minimize off site impacts without compromising safety.

Drilling of the well would require the use of 2,000 barrels (84,000 gallons) of water. As previously stated, water would be supplied from a local farmer just east of the proposed Project

site.

Hazardous materials would be used and stored on site according to applicable Federal, State and local regulations. However, the proposed Project would not result in the production of hazardous waste as defined and regulated by Titles 22 and 23 of the California Code of Regulations. Rather, the Project would generate non-hazardous designated waste, including drilling mud and oily wastes that can be disposed of in a permitted Class II disposal facility. In the unlikely event that anticipated waste were to later be deemed a hazardous Class I waste by the state, such waste would be treated, stored and disposed of at an offsite facility permitted to accept Class I waste.

Hazardous materials and non-hazardous waste would be transported by a licensed transportation company. The commercial transportation, identification, and designation of appropriate shipping routes for these materials would be in conformance with the adopted Tulare County and Incorporated Cities Hazardous Waste Management Plan (HWMP). California regulates the transportation of hazardous waste originating or passing through the State, by statute, in the California Health and Safety Code and Title 22 and 13 of the California Code of Regulations (CCR). The California Highway Patrol (CHP) and Caltrans have primary responsibility for enforcing these regulations and responding to hazardous materials transportation emergencies. The CHP enforces materials and hazardous waste labeling and packing regulations that prevent leakage and spills of material in transit and provides detailed information to cleanup crews in the event of an incident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of the responsibility of the CHP. The CHP conducts regular inspections of licensed transporters to ensure regulatory compliance. Transportation of hazardous waste is also regulated under the Hazardous Materials Regulations Section 49 of the Code of Federal Regulations (CFR). The Environmental Protection Agency (EPA) exempts the transportation of produced water, drilling fluids, drill cuttings and rig wash as the EPA believes these “special wastes” are lower in toxicity than other wastes being regulated as hazardous waste under Resource Conservation and Recovery Act (*Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations*, EPA, October 2002).

Above ground portable tanks would be used for mixing and storing of drilling fluids. All drilling fluids would be disposed of in accordance with the requirements of the Central Valley Regional Water Quality Control Board (RWQCB). The solids that accumulate in the above ground tanks would be transported offsite for disposal. If any wastes test positive for hazardous material they will be disposed of at the Waste Management Kettleman Hills Facility, a licensed Class 1, 2, and 3 treatment, storage and disposal facility. This facility is permitted to receive up to 2,000 tons/day (*Active Landfills Profile*, www.calrecycle.ca.gov) and is located approximately 60 miles due west of this location.

Surface casing would be set, cemented, with blowout prevention equipment installed at the wellhead and tested. The amount of surface casing used depends upon factors such as expected well pressures, the depth of fresh water, and the competence of the strata in which the well casing would be cemented. Blowout prevention equipment is bolted to the surface casing. All successive drilling occurs through the blowout prevention equipment, which can be operated to control well pressures at any time. Blowout prevention equipment is regulated by the State of

California, Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR). DOGGR engineers would be notified for required tests and other required operation witnessing (blowout prevention and surface casing integrity).

Well casing is designed to protect surface and underground waters suitable for irrigation or domestic purposes defined as having <3,000 mg/L Total Dissolved Solids (TDS). DOGGR's well construction standards have the fundamental purpose to ensure zonal isolation. Zonal isolation means that oil coming up a well from the productive, underground geologic zone would not escape the well and migrate into other geologic zones, including zones that might contain fresh water. Zonal isolation also means that the fluids that are put down a well for any purpose would stay in the intended zone and not migrate to another zone. To achieve zonal isolation, DOGGR regulations require that a cement barrier be placed between the well and surrounding geologic strata or stratum. The cement bonds to the surrounding rock and well casing and forms a barrier against fluid migration. Cement barriers must meet certain standards for strength and integrity. If these cement barriers do not meet the standards, DOGGR requires the oil operator to remediate the cement barrier. Metal casings, which can be several layers depending on the depth of a well, also separate the fluids going up and down a well bore from the surrounding geology. If the integrity of a well is compromised by ground movement or other mechanisms, the well operator must remediate the well to ensure zonal isolation. Well casing standards are prescribed in Title 14 CCR, Division 2, Chapter 4, Subchapter 1, Article 3, Sections 1722.2 – 1722.4. According to the California Oil and Gas Fields, Volume 1 – Central California Report (1998), the base of fresh water in the Jasmin Oil Field (closest oil field to the proposed project site) is at a depth of 2,750 feet. Sufficient weighted drilling fluid would be used to prevent any uncontrolled flow from the well and additional quantities of drilling fluid would be available at the site (Title 14, CCR Section 1722.6). Equipment, personnel, and supply deliveries would continue through the course of the drilling program. Drilling activities would operate 24 hours per day. Approximately 8 personnel would be on site at any given time during the drilling operations.

Completion and Testing Phase

Once target depth is reached, the well would be fully evaluated to determine whether it is likely to be capable of production or should be plugged and abandoned. If the well appears to be capable of production based on the geologic and engineering evaluation of the formations, a production rig would be moved on site to complete the well and prepare the well for production testing. The completion rig would operate 10 hours per day for approximately three (3) days. During this period, the wellbore would be perforated for production testing. Approximately four (4) personnel would be on site when the completion rig is operating.

KEBO estimates that testing operations for the well would require approximately 180 days. A well would be tested with a flow line running from the well to a portable oil/gas separator. Any produced gas would be flared to mitigate emissions of VOCs. The portable temporary flare used would be included in the California Portable Emission Registration Program. Separated crude oil (no water production is expected) would be stored on site in approximately four (4) to six (6) 500 bbl portable tanks for transportation to off-site facilities.

KEBO anticipates 80 barrels of oil and 0 barrels of produced water would initially be produced daily from the well. During the testing phase, the oil would be transported offsite by truck to the ALON USA Bakersfield Refinery, located at 6451 Rosedale Highway, Bakersfield, California, 93308-5202. KEBO estimates that five (5) truck trips per week would be required to transport the oil to the ALON USA Bakersfield Refinery, about 40 miles to the south of the proposed Project site. Equipment required for completing and testing a well is listed in the IS/MND for the Project.

Production Phase

If the well is determined to have economic production potential, production equipment including a well head and pump jack with a 15 hp motor would be installed at the proposed Project site. Equipment used during the installation of production equipment and equipment used during the production phase is listed in the IS/MND for the Project. Approximately eight (8) personnel would be on site at any given time during the production equipment installation phase. During the production phase, the Project site would be visited daily by one (1) personnel.

SURVEY METHODOLOGIES

A literature review was completed and field surveys were conducted to identify special-status plant and wildlife species and sensitive habitats that could potentially be present within the proposed Project site and buffer area. The following section describes the databases and references that were reviewed prior to conducting field surveys and the methods that were implemented during biological surveys.

Literature Review: Prior to conducting biological surveys for the proposed project site and buffer area, we reviewed data files and records from the following sources:

- United States Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC) (USFWS 2019);
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) RareFind 5 and Biological Information and Observation System (BIOS) (CDFW 2019);
- California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2019);
- Tulare County General Plan (Tulare County 2012); and
- Soil Survey of Tulare County, California Western Part, (Wasner and Arroues 2003).

From each review, a list of special-status species was generated for species that occur in or may be affected by projects in the Richgrove USGS 7.5-minute quadrangle. Special-status species that potentially occur in this quadrangle (an area measuring approximately 70 square miles) are identified in Table 1.

Background information for several listed wildlife and plant species (including biology, reasons for decline, limiting factors, etc.) that have potential to occur within and/or adjacent to the proposed project site and buffer area is found in *the Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998) and various 5-Year Reviews for Federally listed species. Species descriptions and information of the identification, life histories, and habitat requirements of listed and other special-status species were obtained through the USFWS Environmental Conservation Online System (ECOS), the CDFW California Wildlife and Habitat Relationships System (CWHR), NatureServe Explorer (NatureServe 2019), and the Cornell Lab of Ornithology All About Birds website (Cornell University 2019). USFWS 5-Year Species Reviews were consulted for Federally listed wildlife species including San Joaquin kit fox (USFWS 2010a), blunt-nosed leopard lizard (USFWS 2010b), Tipton kangaroo rat (USFWS 2010c), San Joaquin adobe sunburst (USFWS 2007) and California jewelflower (USFWS 2013). Relevant technical information from these databases, reports, literature sources, and websites and are incorporated and referenced as appropriate.

Each of the species identified in the database queries was evaluated in terms of its likelihood to occur within the proposed Project site and buffer area (see Table 1). This evaluation considered the known distribution and habitat requirements of the species and the following findings were prepared:

- Known to Occur – species was observed within or adjacent to the Project site or buffer area during biological surveys or has previously been documented within or immediately adjacent to the Project site or buffer area.
- Potentially Present – species has not been documented within or immediately adjacent to the Project site or buffer area, but should be expected in areas of suitable habitat on and near the Project site during the appropriate season and time of day.
- Low Potential – species has not been documented within or immediately adjacent to the Project site or buffer area, nor is it likely to occur on or near the Project site or buffer area, but its presence cannot be completely discounted due to incomplete information on the taxon’s distribution or habitat requirements.
- No Potential – species does not occur within or immediately adjacent to the Project site or buffer area due to the lack of required habitat features for the species, or the known range of the species is well defined and does not include the Project vicinity.

Special-Status Species - Special-status species are those taxa that are legally protected under the State or Federal Endangered Species Act (ESAs) or other regulations and considered sufficiently rare by the scientific community to qualify for such listing. Special-status plants and animals generally fall into one or more of the following categories:

- Listed or proposed for listing as Threatened or Endangered under the Federal ESA on the *List of Endangered and Threatened Wildlife* at 50 Code of Federal Regulations [CFR] 17.11 and the *List of Endangered and Threatened Plants* at 50 CFR 17.12;

- Avian species classified as a USFWS Bird of Conservation Concern (BCC);
- Animals classified by the California Fish & Game Commission (FGC) as State listed; in the *State And Federally Listed Endangered and Threatened Animals of California*, California, Natural Resources Agency, Department of Fish and Wildlife, Biogeographic Data Branch CNDDDB (list dated August 7, 2019) (CDFW 2019b);
- Animals Fully Protected by CDFW (California Fish & Game Code, Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]);
- Animal Species of Special Concern (SSC) to the CDFW (CDFW 2019c);
- Plants listed as California Rare Plant Rank 1A are presumed extinct in California (CNPS 2019);
- Plants listed as California Rare Plant Rank 1B are considered rare, threatened, or endangered in California or elsewhere (CNPS 2019);
- Plants listed as California Rare Plant Rank 2 are considered rare or endangered in California, but more common elsewhere (CNPS 2019);
- Plants identified as California Rare Plant Rank 3 are those for which more information is needed; a review list (CNPS 2019); and
- Plants listed as California Rare Plant Rank 4 are of limited distribution; on a watch list (CNPS 2019). These taxa may be included as special-status species on the basis of local significance or recent biological information.

SENSITIVE WILDLIFE SPECIES SURVEYS

Reconnaissance level biological surveys were conducted for the proposed Project on August 6, 2019. An additional survey was conducted on September 20, 2019 to evaluate options for access routes to the proposed well site. Biological surveys were conducted to identify the following:

- Suitability of habitat(s) to support special-status wildlife species
- Presence of San Joaquin kit fox dens
- Presence of individual blunt-nosed leopard lizards
- Burrows and "sign" of Tipton kangaroo rat
- Sightings, nests, and sign of migratory birds and other sensitive avian species
- Vegetation association, habitat types, and special-status plant species
- Dominant plant canopy and ground cover species
- Habitat condition and quality
- On-site, adjacent, and surrounding land uses.

Standard guidance from wildlife regulatory agencies and approved methodologies for conducting special-status species surveys were utilized. Surveys were completed by walking parallel transects spaced at 30 to 50 foot intervals to identify special-status wildlife species in the proposed Project site and a surrounding 500 foot buffer area. Presence of these species was confirmed by direct observation or by identification of sign (e.g., tracks, scat, dens and/or burrows, nests, etc.) unique to a particular species. All wildlife and plant species observed during biological surveys were recorded.

San Joaquin Kit Fox: We conducted diurnal surveys for San Joaquin kit fox dens and their sign, following CDFW Approved Survey Methodologies for Sensitive Species (CDFG 1990) and by USFWS guidelines (USFWS 2011). Where San Joaquin kit fox sign and/or potential dens were identified, they were recorded using GPS and mapped on USGS topographic maps and/or aerial imagery. In addition, we used knowledge gained from past experiences working with numerous kit fox dens and active sign (tracks, scat, etc.) during biological surveys and den monitoring. Underground dens were classified according to the following USFWS kit fox den definitions (USFWS 2011):

Potential Den: Any subterranean hole within the species' range that has entrances of appropriate dimensions for which available evidence is insufficient to conclude that it is being used or has been used by a kit fox. Potential dens shall include the following: (1) any suitable subterranean hole; or (2) any den or burrow of another species (e.g., coyote, badger, red fox, or ground squirrel) that otherwise has appropriate characteristics for kit fox use.

Known Den: Any existing natural den or manmade structure that is used or has been used at any time in the past by a San Joaquin kit fox. Evidence of use may include historical records, past or current radio telemetry or spotlighting data, kit fox sign such as tracks, scat, and/or prey remains, or other reasonable proof that a given den is being or has been used by a kit fox. The Service discourages use of the terms "active" and "inactive" when referring to any kit fox den because a great percentage of occupied dens show no evidence of use, and because kit foxes change dens so often, with the result that the status of a given den may change frequently and abruptly.

Natal or Pupping Den: Any den used by kit foxes to whelp and/or rear their pups. Natal/pupping dens may be larger with more numerous entrances than dens occupied exclusively by adults. These dens typically have more kit fox tracks, scat, and prey remains in the vicinity of the den, and may have a broader apron of matted dirt and/or vegetation at one or more entrances. A natal den, defined as a den in which kit fox pups are actually whelped but not necessarily reared, is a more restrictive version of the pupping den. In practice, however, it is difficult to distinguish between the two, therefore, for purposes of this definition either term applies.

Atypical Den: Any manmade structure which has been or is being occupied by a San Joaquin kit fox den. Atypical dens may include pipes, culverts, and diggings beneath concrete slabs and buildings.

Tipton Kangaroo Rat: The *Survey Protocol for Determining Presence of San Joaquin Kangaroo Rats* (USFWS 2013a) was not implemented for the proposed Project. No live-trapping surveys were conducted to determine presence of Tipton kangaroo rat because no small mammal burrows were recorded in the proposed Project site, and no evidence of kangaroo rat (i.e., tracks and/or tail drags) was observed in the Project site or buffer area during biological surveys.

Blunt-Nosed Leopard Lizard: Protocol level surveys to detect blunt-nosed leopard lizard were not completed for the proposed Project, based on a lack of small mammal burrows in the Project site and buffer area.

Other Sensitive Wildlife: During biological surveys, we looked for the presence of habitat features (dens, burrows, nesting sites, etc.) that may be suitable for potential use by listed and other special-status wildlife species. Binoculars were used during field surveys to aid in identification of wildlife species. We surveyed for blunt-nosed leopard lizard, evidence of Tipton kangaroo rat and other targeted species (see Table 1). Emphasis was placed on the identification of small mammal burrows may serve as potential for these species. Habitat features (i.e., burrows, dens, nests, etc.), direct observations of species, and their sign (i.e., tracks, scat, etc.) were recorded during biological surveys.

SPECIAL-STATUS PLANT SURVEYS/HABITAT ASSESSMENT

Literature Review: Prior to conducting field surveys, we reviewed information from various sources to determine special-status plant species that are known to occur, or have potential to occur in the vicinity to the proposed Project. Special-status plant species include species listed as Endangered, Threatened, or Rare by the USFWS, CDFW, and species ranked by the CNPS using the California Rare Plant Ranking (CRPR) system (CNPS 2019). Sources consulted for information on the distribution of special-status plant species include occurrence records and maps from the CNDDB (CDFW 2019) and CNPS records (CNPS 2019) for the Richgrove NW USGS 7.5 minute quadrangle, and the unofficial species list for the Project site in the USFWS IPaC Trust Resource Report (USFWS 2019).

Plant Species Surveys and Identification: The proposed Project site was walked systematically on August 6, 2019 and September 20, 2019 to ensure thorough coverage of areas that may be subject to disturbance during Project activities. These surveys were floristic in nature and were completed concurrent with surveys to detect sensitive wildlife species. Surveys were conducted consistent with the USFWS *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 2000), CDFW *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009), and CNPS *Botanical Survey Guidelines* (CNPS 2001). These guidelines include recommendations for determining when a botanical survey is needed, and how surveys may be conducted when a proposed activity may affect special-status native plants and natural communities. Vascular plant species encountered during surveys were

identified using standard manuals and previous experience with common plants in the San Joaquin Valley; scientific nomenclature used for plant species in this report follows Hickman (1996).

Table 1
Special-Status Species Potentially Occurring in the Proposed Project Site

Common Name	Scientific Name	Federal Status	State Status	Habitat/Requirements	Potential to Occur in Project Site
<i>Amphibians and Reptiles</i>					
Blunt-nosed leopard lizard	<i>Gambelia sila</i>	FE	SE FP	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief. Seeks cover in mammal burrows, under shrubs or structures such as fence posts. They do not excavate their own burrows.	No Potential. Annual grassland is present in the proposed Project site and buffer area; however, no burrows suitable for potential use by this species were observed during biological surveys. The species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019). No individual blunt-nosed leopard lizards were observed during biological surveys.
California red-legged frog	<i>Rana draytonii</i>	FT	SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Must have access to aestivation habitat, consisting of small mammal burrows and moist leaf litter.	No Potential. The proposed Project site is outside the historic range and current distribution of the species.
Western spadefoot	<i>Spea hammondi</i>	--	SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	Low Potential. Potential upland aestivation habitat is present in the proposed Project site and buffer area; however, no suitable aquatic breeding habitat (vernal pools) is present. This species has been documented approximately 2.8 miles southwest of the proposed Project site (CDFW 2019). No individuals were observed during biological surveys.

Table 1
Special-Status Species Potentially Occurring in the Proposed Project Site

Common Name	Scientific Name	Federal Status	State Status	Habitat/Requirements	Potential to Occur in Project Site
Giant garter snake	<i>Thamnophis gigas</i>	FT	ST	A highly aquatic species that prefers fresh water marsh and low gradient streams. Has adapted to drainage ditches and irrigation canals.	No Potential. The proposed Project site is located outside the historic range and current distribution of the species.
Birds					
Lawrence's goldfinch	<i>Carduelis lawrencei</i>	BCC	SSC	Open woodlands, chaparral, and brushy areas or weedy fields. Nests in trees and feeds almost exclusively on seeds from annual plants. Breeds March 20 to September 20.	Low Potential. Lawrence's goldfinch may potentially forage in the proposed Project site or travel through during normal migration. However, no suitable nesting habitat is present in the proposed Project site or buffer area. The species has not been documented in the CNDDB in proximity to the proposed Project site (CDFW 2019), but has been recorded in various locations in Tulare County (eBird 2019). No individuals were observed during biological surveys.
Tricolored blackbird	<i>Agelaius tricolor</i>	BCC	SSC	Freshwater emergent wetlands. This highly colonial species requires open water, protected nesting substrate, and a foraging area with insect prey within a few kilometers of the colony. Breeds March 15 to August 10.	Low Potential. No wetland habitat or suitable nesting habitat is present in the proposed Project site or buffer area. However, small agricultural ponds were observed approximately 0.3 miles north of the proposed Project site, adjacent to the existing access road south of Avenue 40. This species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019). No individuals were observed during biological surveys.

Table 1
Special-Status Species Potentially Occurring in the Proposed Project Site

Common Name	Scientific Name	Federal Status	State Status	Habitat/Requirements	Potential to Occur in Project Site
Mammals					
Tipton kangaroo rat	<i>Dipodomys nitratoides nitratoides</i>	FE	SE	Saltbush scrub and sink scrub communities in the Tulare Lake Basin of the Southern San Joaquin Valley. Requires soft, friable soils which escape seasonal flooding. This species digs burrows in elevated soil mounds often at the bases of shrubs.	No Potential. No suitable habitat is present in the proposed Project site or buffer area and surrounding lands were historically converted to agricultural use. No potential burrows or sign of species presence (i.e., kangaroo rat tracks, tail drags, seed caching, etc.) was observed during biological surveys. This species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019).
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE	ST	Inhabit annual grasslands or grassy open stages with scattered shrubby vegetation. Require loose-textured sandy soils for burrowing, and a suitable prey base.	Low Potential. Potential habitat is present in the proposed Project site and buffer area. Two (2) potential dens were recorded during biological surveys; however, no sign (i.e., scat, tracks, etc.) of San Joaquin kit fox was observed in the proposed Project site or buffer area. The species has been historically documented in several locations in vicinity to the proposed Project site (see Figure 3). The nearest occurrence of San Joaquin kit fox is recorded 0.6 miles to the west/southwest, in a parcel that has since been converted to agricultural use (CDFW 2019).
Invertebrates					
Vernal pool fairy shrimp	<i>Branchinecta lynchii</i>	FT	--	Found in short-lived, seasonal cool-water vernal pools with low to moderate dissolved solids.	No Potential. No suitable habitat (vernal pools) was observed within the proposed Project site or buffer area. This species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019).

Table 1
Special-Status Species Potentially Occurring in the Proposed Project Site

Common Name	Scientific Name	Federal Status	State Status	Habitat/Requirements	Potential to Occur in Project Site
Plants					
California jewelflower	<i>Caulanthus californicus</i>	FE	SE/1B.1	Chenopod scrub, Pinyon and juniper woodland, valley and foothill grasslands. Found on sandy soils. Elevation range: 61 to 1,000 meters. Blooming period: February through May.	Low Potential. The Project is not proposed in a locale where the species has been documented or is currently known to occur (USFWS 2013). Annual grassland habitat is present; however, the proposed Project site and buffer area are previously disturbed by the former Richgrove Landfill. Historical occurrences of California jewelflower are recorded approximately 0.8 miles northeast and 2 miles southwest; however, the species has been extirpated from locations where populations were known to occur in the vicinity (CDFW 2019).
Recurved larkspur	<i>Delphinium recurvatum</i>	-	-/1B.2	Chenopod scrub, cismontane woodland, valley and foothill grasslands. Found on alkaline soils. Elevation range: 3 to 790 meters. Blooming period: March through June.	Low Potential. The proposed Project is not proposed in a locale where the species has been documented or is currently known to occur (CDFW 2019). Annual grassland habitat is present; however, the proposed Project site and buffer area are previously disturbed and in the former Richgrove Landfill. A historical occurrence of recurved larkspur is recorded approximately 6.6 miles to the southeast, east of State Highway 65 (CDFW 2019).
San Joaquin adobe sunburst	<i>Pseudobahia peirsonii</i>	FT	SE/1B.1	Cismontane woodland, valley and foothill grasslands. Found on adobe clay soils; the species' distribution is limited by soil type. Elevation range: 90 to 800 meters. Blooming period: February through April.	No Potential. Annual grassland habitat is present; however, the proposed Project site does not contain heavy clay, adobe soils which typically support San Joaquin adobe sunburst (USFWS 2007). The proposed Project is not proposed in a locale where the species has been

Table 1
Special-Status Species Potentially Occurring in the Proposed Project Site

Common Name	Scientific Name	Federal Status	State Status	Habitat/Requirements	Potential to Occur in Project Site
					documented or is currently known to occur. Historical occurrences of the species are recorded in locations approximately 2.2 miles and 5.2 miles to the southeast, and 6.5 miles to the east, on the east side of State Highway 65 (CDFW 2019).

Status Codes:

Federal

FE = Federally listed as Endangered

FT = Federally listed as Threatened

FC = Federal Candidate Species

BCC = Bird of Conservation Concern

State

SE = State listed as Endangered

ST = State listed as Threatened

FP = CDFW Fully Protected

SSC = CDFW Species of Special Concern

California Rare Plant Rank

California Rare Plant Rank 1B = Plants rare, threatened, or endangered in California and elsewhere

Threat Rank 0.1 = Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)

Status, distribution, and habitat information from the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database RareFind 5 (CDFW 2019); California Native Plant Society, California Rare Plant Electronic Inventory (CNPS 2019); and United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (USFWS 2019).

RESULTS AND DISCUSSION

Results of biological surveys for the proposed Project are presented below. The following discussion describes the habitat that is present and site conditions that were observed during biological surveys and focuses on special-status wildlife and plant species that could potentially occur in the proposed Project site and buffer area. A list of wildlife and plant species observed during biological surveys is included as Table 2.

Table 2

List of Animal and Plant Species Observed During Biological Surveys

Scientific name	Common name
Animals	
<i>Bubo virginianus</i>	Great horned owl
<i>Corvus corax</i>	Common raven
<i>Otospermophilus beecheyi</i>	California ground squirrel
<i>Sylvilagus auduboni</i>	Desert cottontail
<i>Uta stansburiana</i>	Common side-blotched lizard
<i>Zenaida macroura</i>	Mourning dove
Plants	
<i>Amsinckia</i> sp.	Fiddleneck
<i>Asclepias</i> sp.	Milkweed
<i>Avena fatua</i>	Wild oat
<i>Brassica nigra</i>	Black mustard
<i>Bromus rubens</i> ssp. <i>madritensis</i>	Red brome
<i>Centaurea melitensis</i>	Tocalote (Maltese star thistle)
<i>Croton setigerus</i>	Dove weed
<i>Cucurbita palmate</i>	Coyote melon
<i>Datura wrightii</i>	Sacred thorn-apple
<i>Euphorbia supina</i>	Prostrate spurge
<i>Helianthus annuus</i>	Annual sunflower
<i>Heterotheca grandiflora</i>	Telegraph weed
<i>Isocoma</i> sp.	Goldenbush
<i>Lactuca serriola</i>	Prickly lettuce
<i>Salsola tragus</i>	Russian thistle
<i>Sisymbrium altissimum</i>	Tumble mustard
<i>Tribulus terrestris</i>	Puncture vine
<i>Trichostema lanceolatum</i>	Vinegar weed

HABITAT

Habitat types observed in the proposed Project site and buffer area are classified and described in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995). Vegetation alliances that were present included:

- *Bromus rubens* - *Schismus (arabicus, barbatus)* (Red brome or Mediterranean grass grasslands) Semi-natural Stands
- *Brassica nigra* and other mustards (Upland mustards) Semi-natural Stands

While non-native annual grassland is not classified as a sensitive vegetation community, the habitat type represents potential for various upland species in the San Joaquin Valley that are considered special-status species (USFWS 1998). Much of the general area was historically converted to agricultural use and the Project is proposed on lands that were formerly used by Tulare County as the Richgrove Landfill. Agricultural crops surrounding the proposed Project site included grape vineyards, almonds, cherries, and wheat.

No USFWS designated critical habitat is present in the proposed Project site or buffer area.

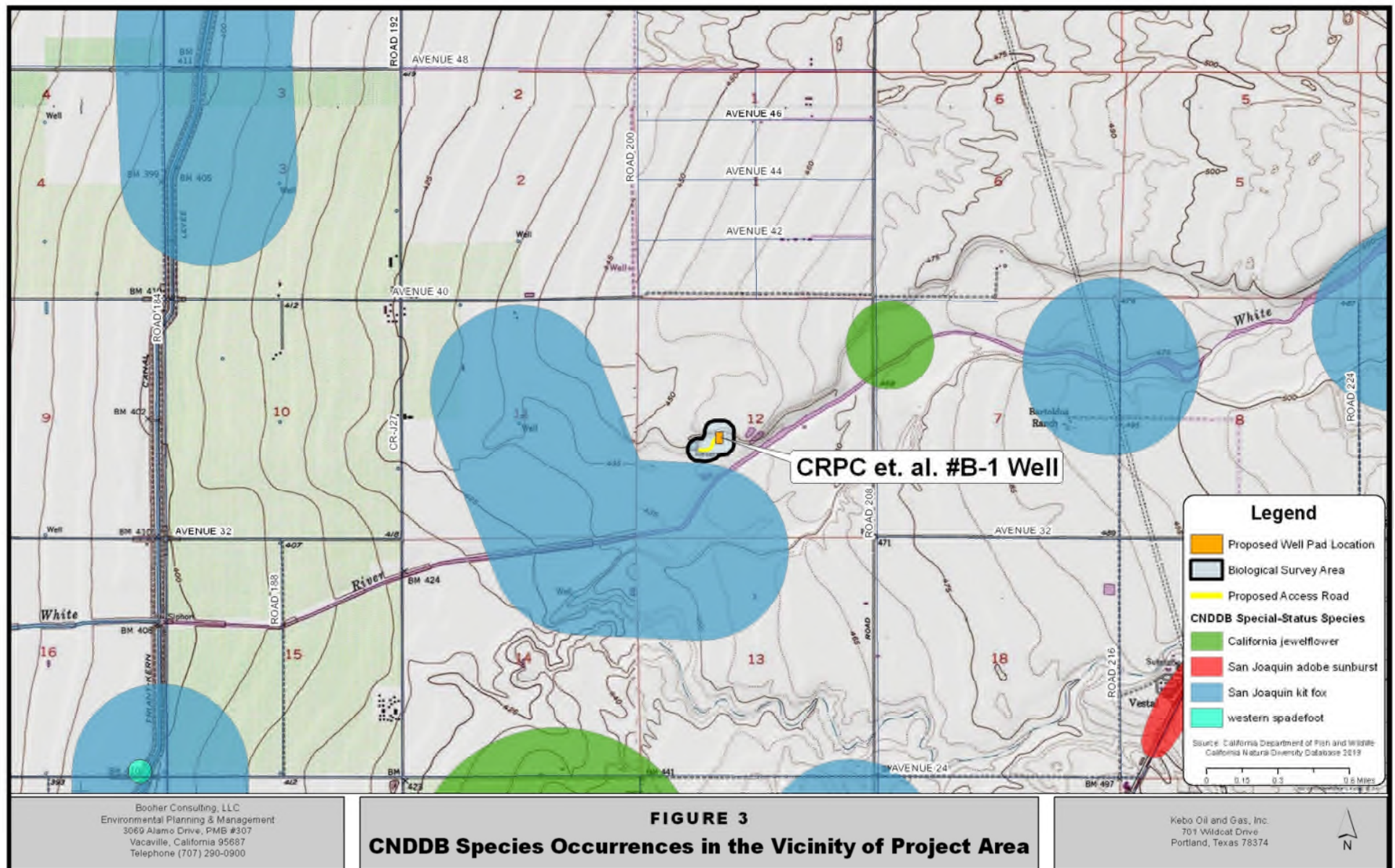
SPECIAL-STATUS BIOLOGICAL RESOURCES

Through a literature review and an electronic search of the CNDDDB, USFWS IPaC, and CNPS databases, a total of 11 special-status species were identified that occur in or may be affected by projects in the Richgrove quadrangle (an area measuring approximately 70 square miles). These include eight (8) special-status wildlife and invertebrate species, and three (3) special-status plants. An additional species, the Western spadefoot, was also identified in the adjacent quadrangle to the west. Table 1 provides a list of these special-status species, describes their habitat, and includes a brief analysis of their potential to occur in the proposed Project site and buffer area.

The proposed Project site occurs outside of the general locations of areas targeted as Valley Floor linkages between natural communities, based on the presence of natural lands versus lands that have been (historically) converted to agricultural or urban use. No special-status species were observed in the proposed Project site or buffer area during biological surveys. No special-status species have been previously recorded within the boundaries of the proposed Project site. Four (4) species have been historically documented in the CNDDDB in proximity to the proposed Project site (CDFW 2019):

- San Joaquin kit fox
- California jewelflower
- Western spadefoot
- San Joaquin adobe sunburst

Figure 3 illustrates the locations of special-status plant and animal occurrences relative to the proposed Project site that are documented in the CNDDDB.



Amphibians & Reptiles

Blunt-Nosed Leopard Lizard is listed as a federal and State endangered species. The species is also considered Fully Protected by the CDFW. Blunt-nosed leopard lizards inhabit open, sparsely vegetated areas of low relief and are absent from areas of steep slope, dense vegetation, or seasonal flooding. The species occurs in association with alkali scrub, saltbush scrub (*Atriplex* spp.), Ephedra scrub, and native and non-native grassland vegetation communities (Germano and Williams 2005).

Habitat loss from agricultural, energy, and urban developments have greatly reduced the range of blunt-nosed leopard lizard and continue to threaten the species (USFWS 2010c). Species experts determined that over 80-85% of the species' range had been lost by the early 1990's (Germano and Williams 1992) and impacts to habitat continue, from both authorized and unauthorized activities (USFWS 2010). The current range of the species includes undeveloped parcels in the southern-most portion of the San Joaquin Valley (Tulare and Kings Counties south), San Joaquin Valley floor in the vicinity of western Madera County, and along the western edge of the San Joaquin Valley from Merced County south. Its range also extends into the Carrizo Plain and Cuyama Valley southwest of the San Joaquin Valley.

Individual blunt-nosed leopard lizards use small rodent burrows for shelter from predators and temperature extremes and for breeding (nesting). Their burrows are usually abandoned ground squirrel tunnels, or occupied or abandoned kangaroo rat tunnels (Montanucci 1965). Seasonal above-ground activity is correlated with weather conditions (primarily temperature). Optimal activity occurs when air temperatures are between 23.5 °C and 40 °C and ground temperatures are between 22 °C and 36 °C (USFWS 1985). Adults are active above ground in the spring months from March or April through June or July with the level of activity decreasing until approximately late June when most adults go underground and become inactive. At this latter time only sub-adult and hatchling individuals generally continue to be active. By August or September generally all adults have retreated to burrows to begin over-wintering. Hatchlings may be active until mid-October or November.

The average home range size of blunt-nosed leopard lizards in the southern end of the Valley, near Lokern, ranges from 9 to 23 acres (Bailey and Germano 2015). Estimated densities in occupied habitat have varied from 0.1 to 8.5 lizards per acre (Uptain *et al.* 1985, Williams and Germano 1991, Williams *et al.* 1993, Germano *et al.* 1994). Based on a recent study of habitat patch size, blunt-nosed leopard lizards were not present in areas of suitable habitat that measured less than 588 acres in size (Bailey and Germano 2015). Modeling indicated there was only a 4% chance of blunt-nosed leopard lizard occurring on a habitat patch less than 250 acres, and the probability of occurrence increased as the size of the habitat patch increased (Bailey and Germano 2015).

The species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019). As previously described, the Project is proposed in the former Richgrove Landfill site, which has been disturbed by past use and continued trespass dumping. The parcel contains non-native annual grassland but does not represent suitable habitat for blunt-nosed leopard lizard based on a lack of burrows.

Factors contributing to the unsuitability of the site for blunt-nosed leopard lizard include small patch size, surrounding agricultural use, and isolation from any adjacent suitable habitat. Based on aerial imagery, lands outside the proposed Project site parcel are mainly under active agricultural production. Forage for blunt-nosed leopard lizards in the parcel where the Project is proposed would be considered limited or unavailable due to pesticide use on surrounding agricultural lands. Based on these factors and site conditions observed during biological surveys, blunt-nosed leopard lizards are not expected to occur in the proposed Project site or buffer area.

California red-legged frog is the largest native frog in the western United States, ranging from 1.75 to 5.25 inches from snout to vent (Stebbins 2003). The California red-legged frog can appear brown, gray, olive, red, or orange above with a pattern of dark spots or flecks. The hind legs are well developed, with large webbed feet. Adult frogs have white on the underside, with patches of bright red or orange on the hind legs and abdomen.

The California red-legged frog requires a variety of habitat elements, with aquatic breeding areas within a matrix of riparian and upland dispersal habitats (USFWS 2013). Breeding occurs from November through March. Deep pools with dense stands of overhanging willows and an intermixed fringe of cattails are considered optimal habitat; however the species has been found in ephemeral creeks and drainages, and in ponds that do not support riparian vegetation. Accessibility to sheltering habitat is essential for red-legged frogs, and can be a limiting factor in its distribution. Historically distributed along the coast from Marin County and inland from Shasta County, south to northwestern Baja California, the species is currently known to occur in only a few drainages in the Sierra Nevada foothills, compared to more than 60 historical records (USFWS 2013). In southern California, the species has essentially disappeared from the Los Angeles area south to the Mexican border; the only known population in Los Angeles County is on the Angeles National Forest, in San Francisquito Canyon. This species is federally listed as Threatened and a recovery plan for the California red-legged frog was published on May 28, 2002. Designated critical habitat for this species was revised and a final rule was published on March 17, 2010.

The proposed Project site is located outside the historic range and current known distribution of the species. No suitable breeding habitat for the California red-legged frog is present in the proposed Project site, buffer area or within one (1) mile. No individuals were observed in the proposed Project site or buffer area during biological surveys. This species has not been previously documented in the CNDDDB within the boundaries of or in proximity to the proposed Project site (CDFW 2019). Since the proposed Project site and buffer area do not support aquatic or riparian habitat, and the proposed Project site does not occur within one (1) mile of suitable breeding habitat, California red-legged frogs are not expected to occur in the proposed Project site.

Western spadefoot occurs in grassland habitats, and in valley-foothill hardwood woodlands. This species requires vernal pools for breeding and egg-laying. Western spadefoot has been recorded near the Friant Kern Canal, approximately 2.8 miles southwest of the proposed Project site (CDFW 2019).

No suitable habitat was observed in the proposed Project site. No individual Western spadefoot toads were identified during biological surveys. Where natural lands with vernal pools persist, the species would be expected to occur; however, as previously described, the Project is proposed in the former Richgrove Landfill site, which has been disturbed by past use and continued trespass dumping. Based on past land use and site conditions observed during biological surveys, western spadefoot are not expected to be present in the proposed Project site.

Giant garter snake is the largest of all garter snakes and perhaps the most aquatic garter snake of California. They are brown below and brown, olive or tan above with checkered spots and three (3) pale or yellow stripes that run down their back and sides. Giant garter snakes generally measure three to five (3-5.5) feet in length. Giant garter snakes are active spring to mid-fall (May 1 through October 1).

Breeding occurs from March to May. Females give birth to live young from late July to early September; brood sizes range from 10 to 46 young. During fall, they seek refuge in burrows or other soil crevice above floodwater levels and remain dormant throughout the winter. The diet of a giant garter snake consists mainly of fish, amphibians, and their larvae. They will also consume ground nesting birds and their young.

The species occurs in marsh, swamp, riparian scrub, and wetland habitats. Giant garter snakes prefer freshwater marsh and low gradient streams with mud bottoms, but have adapted to drainage canals and irrigation ditches (CDFW 2019). These snakes require enough water during the active season to maintain high densities of prey; emergent wetland vegetation (i.e., cattails and bulrushes) for cover and foraging; and adjacent uplands for basking. Higher uplands are used for cover and refuge from floodwaters during its inactive season.

The giant garter snake is listed as a Federal and State threatened species. Giant garter snakes are endemic to the Central Valley of California and historically occurred throughout the San Joaquin and Sacramento Valleys (Hansen and Brode 1980). The species has been documented north from Colusa County and south to Buena Vista Lake in Kern County. Its current range is limited to the Sacramento Valley and isolated portions of the San Joaquin Valley (USFWS 1999); however, there have only been a few recent sightings in the San Joaquin Valley (USFWS 2019).

The proposed Project site is located outside the historic range and current known distribution of the species. Since the proposed Project site is located outside the species' range, the species is not expected to occur in the proposed Project site or buffer area.

Birds

Lawrence's goldfinch is a small finch with a pointed bill and forked tail. These birds are grayish brown in appearance with yellow wing patches; males have a black face and yellow belly patch. Lawrence's goldfinches nest in open woodlands with chaparral, weedy fields, and a source of freshwater. They require trees for nesting, including pinyon pine and juniper, and have been noted using ornamental cypress or conifers. Birds feed mainly on annual plant seeds by gleaning foliage. During the breeding season and over winter, the species is gregarious, traveling and foraging in flocks.

No suitable nesting habitat is present in the proposed Project site or buffer area. No individuals were observed during biological surveys. The species has not been documented in the CNDDDB in proximity to the proposed Project site (CDFW 2019), but has been recorded in various locations in Tulare County. Individuals have been observed near Lake Wollomes, approximately 7.8 miles to the southwest, and at the Pixley National Wildlife Refuge, 15 miles northwest of the proposed Project site (eBird 2019).

Lawrence's goldfinch may potentially forage in the proposed Project site or travel through during normal migration; however, there is low potential for the species to become established or to nest in the proposed Project site based on a lack of suitable nesting habitat.

Tricolored blackbird is mostly a resident in California and is common throughout the Central Valley. The tricolored blackbird is listed as a USFWS Bird of Conservation Concern (BCC), and a CDFW Species of Special Concern (SSC).

The species breeds near freshwater, generally in emergent wetlands that support tall, dense cattails and/or tules. This highly colonial species requires open water, protected nesting substrate, and a foraging area with insect prey within a few miles of the colony. Tricolored blackbirds feed in grassland, cropland, and along the edges of ponds.

No suitable nesting habitat is present in the proposed Project site or buffer area. However, small agricultural ponds were observed approximately 0.3 miles north of the proposed Project site, adjacent to the existing access road south of Avenue 40. This species has not been documented in proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019). No individuals were observed during biological surveys. Tricolored blackbird may fly over and/or forage in the Project area; however, there is low potential for the species to become established or to nest in the proposed Project based on a lack of suitable nesting (wetland) habitat.

Mammals

Tipton kangaroo rat occurs in saltbush scrub and sink scrub habitats in the Tulare Lake Basin of the southern San Joaquin Valley. This species needs soft, friable soils that escape seasonal flooding and the species often dig burrows at the bases of shrubs (CDFW 2019).

Historically, Tipton kangaroo rats were distributed on the Valley floor; distribution was limited to arid-land communities occupying the valley floor of the Tulare Basin (USFWS 2010a and USFWS 1998). By 1985, the inhabited area had been reduced, primarily by cultivation and urbanization, to only about 4 percent of the historical acreage. The construction of dams and canals, leading to a substantial increase in lands that could then be used for agriculture or development, was principally responsible for the decline and endangerment of the Tipton kangaroo rat.

The current geographic distribution of the subspecies is not clearly defined. Current occurrences are limited to scattered, isolated areas (Kings, Tulare, and Kern Counties). Approximately 75 Tipton kangaroo rat occurrences have been reported to CNDDDB (CDFW 2019). Densities

typically are low, but populations are known to fluctuate greatly in response to climatic conditions (precipitation) and vary across habitat type (seasonal/short-lived invasion of vegetation, particularly by non-native grasses, can exacerbate Tipton kangaroo rat declines) (Morrison et al. 1996; Williams and Germano 1992). A majority of the known sites that are occupied by Tipton kangaroo rat are under public/conservation ownership and these populations are small, highly fragmented and isolated from each other (USFWS 2010a).

The proposed Project site is not in a wildlife management area or within an area proposed for conservation and restoration for Tipton kangaroo rat. The proposed Project site does not support suitable habitat (alkali sink/scrub) for Tipton kangaroo rats. No small mammal burrows were identified within the proposed Project site and no evidence of the species was observed during biological resource surveys. Tipton kangaroo rat has not been documented in the proximity to the proposed Project site or in the Richgrove quadrangle (CDFW 2019). As previously described, the Project is proposed in the former Richgrove Landfill site, which has been disturbed by past use and continued trespass dumping. Based on a lack of suitable habitat and site conditions observed during biological surveys, Tipton kangaroo rats are not expected to occur in the proposed Project site.

San Joaquin Kit Fox historically occurred throughout the southern portion of the San Joaquin Valley, along the eastern edge of the San Joaquin Valley, and in the dry interior valleys of the Coast Ranges. The species occurs in a variety of open grassland, oak savannah, and shrub vegetation communities. However, in the southern portion of its range it is generally found in sparse annual grassland and scrub communities (e.g., valley sink scrub, saltbush scrub).

Home ranges for the taxon have been reported by several authors to range from 1 to 12 square miles (USFWS 1998). Home range size of kit foxes is very extensive, and is thought to be related to abundance of prey (White and Ralls 1993; White and Garrott 1999). The mean home range size of an adult San Joaquin kit fox at Elk Hills (former Naval Petroleum Reserve) was found to be 1,071 acres, while the mean home range of pups is 525 acres (Cypher *et al.* 2001).

Den characteristics of the subspecies vary across its range. In the southern portion of its range, the taxon often creates dens with two entrances; natal/pupping dens typically have multiple entrances. Entrances range from eight to ten (8-10) inches in diameter and are normally higher than wide, but kit foxes can utilize dens with entrances as small as four (4) inches in diameter. Kit foxes often change dens on a regular basis.

San Joaquin kit fox has not been documented in the proposed Project site. The species has been historically recorded in several locations surrounding the Project; the closest occurrences in the CNDDDB are 0.6 miles southwest, 1.7 miles east, and 2.4 miles south (see Figure 3). The CNDDDB occurrence records are based on den and road kill observations between 1971 and 1975, and were made in locations that have since been converted to agricultural use (CDFW 2019). The proposed Project site occurs between two (2) known satellite population areas and is not considered to provide linkage to core population areas based on the conversion of natural lands to agricultural use (USFWS 2010b). Agricultural lands may provide limited use as foraging habitat for the species; however, documented use of this habitat varies (Clark *et al.* 2005; Warrick *et al.* 2007) and its suitability in supporting kit foxes appears limited (USFWS 2010b).

Potential habitat for San Joaquin kit fox is present in the proposed Project site and buffer area; however, the parcel is disturbed by its former use as the Richgrove Landfill and surrounded by active agriculture. No individual San Joaquin kit fox, known dens, or natal dens were observed. Two (2) burrows that were of appropriate size for potential use by kit fox were recorded. No other sign (i.e., scat, tracks, digging, prey remains, etc.) of kit fox activity was identified during biological surveys. The species may utilize potential dens for shelter, and may forage in the proposed Project site and buffer area. However, forage would be limited in the proposed Project site based on a lack of small mammal burrows that would support a suitable prey base.

Invertebrates

Vernal pool fairy shrimp are short-lived crustaceans that occur in small vernal pools of California. Vernal pool fairy shrimp are endemic to grasslands of the Central Valley, Central and South Coast mountains. The species has been found throughout the Central Valley, from Shasta County to Tulare County, along the Coast Range from Solano to San Luis Obispo and Santa Barbara Counties, and in southern California in Riverside and San Diego Counties.

Their habitats form when winter rains fill shallow depression; pools persist for months and then evaporate in the spring. This species is known to inhabit clear-water sandstone depression and grassland swale pools. They are generally 0.5- 1.5 inches long and are fairly translucent. Their life span is from December to early May, and is often temperature dependent. They feed on algae, bacteria and detritus and are consumed by birds, reptiles, and amphibians. Eggs are laid by adult shrimp each winter season; however, eggs may lie dormant in the soil for up to ten (10) years before hatching.

No suitable habitat (vernal pools) was observed in the proposed Project site or buffer area. As such, vernal pool fairy shrimp are not expected to occur in the proposed Project site.

Incidental Wildlife

Wildlife species that we recorded during our biological surveys for special-status species are listed in Table 2. Common raven and other raptors, such as red-tailed hawk, may construct nests on power poles that occur parallel to existing access roads. Common bird species such as mourning dove may be present and potentially nest in the proposed Project site or buffer area. In the event that resident or migratory birds become established in the proposed Project site prior to Project implementation, avoidance measures are included in this report.

SPECIAL-STATUS PLANTS

Based on literature and database reviews, three (3) special-status plant species have been historically recorded in the Richgrove USGS 7.5 minute quadrangle (see Table 1). These include California jewelflower, recurved larkspur, and San Joaquin adobe sunburst.

California jewelflower is an annual herb that occurs in non-native grassland, scrub, and pinyon-juniper woodland. Historical records suggest that California jewelflower also occurred in valley

saltbush scrub in the past (CDFW 2019). Herbaceous cover is dense at most California jewelflower sites (Cypher 1994). Native plant species, such as annual fescue (*Vulpia microstachys*), clovers (*Trifolium* spp.), red maids (*Calandrinia ciliata*), and goldfields (*Lasthenia californica*) comprise a high proportion of the vegetation at many of the known locations. The non-native grass red brome (*Bromus madritensis* ssp. *rubens*) is a significant component of the vegetation only at the Carrizo Plain sites (Taylor and Davilla 1986, Cypher 1994).

California jewelflower populations are known from 63 occurrences (CNPS 2016). Approximately half of the historic collection sites were on the floor of the San Joaquin Valley in Fresno, Kern, and Tulare Counties. Several other collections are from the Carrizo Plain (San Luis Obispo County) and Cuyama Valley (Santa Barbara and Ventura counties). By 1986, all the occurrences on the San Joaquin and Cuyama Valley floors had been eliminated (USFWS 2013a). Populations of naturally occurring California jewelflower that are known to be extant today are in three concentrated areas: Santa Barbara Canyon, Carrizo Plain National Monument in San Luis Obispo County, and Kreyenhagen Hills in Fresno County. Based on the USFWS 5-Year Review for the species, there are no natural extant populations of California jewelflower in Tulare County (USFWS 2013).

Potential habitat for California jewelflower is present in the proposed Project site and buffer area; however the parcel was disturbed by waste disposal at the former Richgrove Landfill Site. California jewelflower has not been documented within the boundaries of the proposed Project site. Historical occurrences of California jewelflower are recorded approximately 0.8 miles northeast and 2 miles southwest (see Figure 3). The records of California jewelflower are from collections dated 1958 and 1978 (CDFW 2019); however, the species has been extirpated from locations where populations were known to occur in the vicinity during agricultural conversion (USFWS 2013).

The Project is not proposed in a locale where the species has been previously recorded or where extant populations are known to occur (USFWS 2013). Based on conditions observed during biological surveys, and the current known distribution of the species, California jewelflower is not expected to be present or become established in the proposed Project site.

Recurved larkspur is a perennial herb that is endemic to California. Historically, recurved larkspur was widely distributed in the Sacramento and San Joaquin valleys, ranging from Glenn and Butte counties south to Kern County. Most of the known occurrences are in Kern, Tulare, and San Luis Obispo Counties. The species now appears to be very rare outside the southern San Joaquin Valley (CDFW 2019). Much of this species habitat has been converted to agriculture, and the species continues to be threatened by grazing and trampling (CNPS 2019).

Recurved larkspur occurs on sandy or clay alkaline soils, generally in annual grasslands or in association with saltbush scrub or valley sink scrub habitats. The species occurs at elevation ranging from 100 to 2,000 feet above sea level (CDFW 2019). It blooms from March through June (CNPS 2019). Very little ecological information is available for the species and most of the literature on the species pertains to its taxonomy.

Potential habitat for recurved larkspur is present in the proposed Project site and buffer area; however, the parcel was disturbed by waste disposal at the former Richgrove Landfill Site. A historical occurrence of recurved larkspur is recorded approximately 6.6 miles southeast, east of State Highway 65 (CDFW 2019).

The Project is not proposed in a locale where the species has been previously recorded or where extant populations are known to occur (CDFW 2019). Based on conditions observed during biological surveys, and the current known distribution of the species, recurved larkspur is not expected to be present or become established in the proposed Project site.

San Joaquin adobe sunburst is federally listed as threatened and California endangered. The species is narrowly distributed in the Central Valley of California (Stebbins 1991, Hickman 1993). The species has been documented in Fresno, Kern and Tulare Counties and is found at 32 extant occurrences (USFWS 2007). The historical distribution of the species is unknown as a result of extensive land conversion to agriculture. However, three (3) major population concentration areas now include east of Fresno in Fresno County, west of Lake Success in Tulare County, and northeast of Bakersfield in Kern County (CNDDB 2019).

San Joaquin adobe sunburst is an annual herb that blooms during March and April (CNPS 2019). The species occurs on heavy, adobe clay soils within cismontane woodland and valley and foothill grassland habitats. Soil type is the most important factor in determining suitable habitat for this species; distribution is limited to a few soil types (Stebbins 1991). All known wild occurrences of San Joaquin adobe sunburst are associated with the following soils: Cibo clay, Porterville clay, Centerville clay, and Mt. Olive clay (Stebbins 1991).

Historical occurrences of the species are recorded in locations approximately 2.2 miles and 5.2 miles to the southeast, and 6.5 miles to the east, on the east side of State Highway 65 (CDFW 2019). The Project is not proposed in a locale where the species has been previously recorded or where extant populations are known to occur (USFWS 2007). Furthermore, since the proposed Project site and buffer area do not contain clay soils (USDA 2019), which are known to support San Joaquin adobe sunburst, the species is not expected to occur in the proposed Project site.

ANALYSIS OF POTENTIAL IMPACTS

Project activities during site preparation will result in removal of annual vegetation, soil disturbance, and compaction. The proposed Project will impact approximately 0.91 acres of non-native annual grassland habitat. All Project activities, including staging of materials, equipment, and vehicle parking will be confined to the approved Project site and areas of existing disturbance.

No riparian, wetland, vernal pool, or other sensitive habitats are present in the proposed Project site. No perennial or intermittent streams or rivers occur in the proposed Project site or buffer area. Since no water features or sensitive habitats are present, no impacts to streams, riparian areas, wetlands, vernal pools, or other sensitive habitats would result from Project implementation. No USFWS designated critical habitat is present in the proposed Project site; therefore no USFWS designated critical habitat will be impacted. Native resident and/or migratory

fish and known native wildlife nursery sites are not present within the proposed Project area. The proposed Project would not interfere with movements of wildlife species or with established native resident or migratory wildlife corridors.

Based on a lack of suitable aquatic habitat in the Project area, there is no potential for California red-legged frog or giant garter snake to be present in the proposed Project. Since the Project area does not contain vernal pool habitat, there is no potential for Western spadefoot or vernal pool fairy shrimp to be present in the proposed Project. Accordingly, these species would not be impacted by Project implementation.

Since the proposed Project site and buffer area do not support suitable habitat for potential use by blunt-nosed leopard lizards or Tipton kangaroo rat, there is no potential for these species to be present. No impacts to blunt-nosed leopard lizard or Tipton kangaroo rat are anticipated to result from Project implementation.

The proposed Project site is not in a known locale where populations of special-status plants have been recorded; therefore California jewelflower, recurved larkspur, and San Joaquin adobe sunburst are not expected to be present or become established. No impacts to these species are anticipated to result from Project implementation.

No special-status animal or plant species were identified in the proposed Project site during biological surveys. As a result of historic land conversion to agricultural use on surrounding parcels, the proposed Project site is isolated and not connected to native (uncultivated habitats). The proposed Project site is within the former Richgrove Landfill, which has been disturbed by past use as a disposal site and continued trespass dumping. However, based on the habitat type present and environmental conditions observed during biological surveys, Booher Consulting determined there is potential, albeit low, for special-status wildlife species including San Joaquin kit fox, Lawrence's goldfinch, and tricolored blackbird to travel through and/or forage in the proposed Project site.

Implementation of the proposed Project could potentially impact individual San Joaquin kit fox if individuals are present during Project activities. Impacts to kit fox could occur through crushing by construction equipment during site preparation or by vehicle strike during travel to/from the proposed Project site. This species could also be affected due to noise and vibration from Project activities if dens are located closer than 250 feet to the proposed Project site; Project related noise and vibration could cause the abandonment of occupied den sites. If potential dens were present and directly impacted, animals could become entombed in their dens if occupied. If food waste were left during construction, it may attract predators (coyotes, feral dogs) to the proposed Project site, consequently exposing San Joaquin kit fox to increased risk of injury or mortality. San Joaquin kit fox could enter the Project Area at night and become injured or entrapped if holes or trenches are left open overnight and not properly ramped for exit. Impacts to this species would be considered significant. Avoidance and minimization measures to protect San Joaquin kit fox from potential impacts are included and described further in the ***Proposed Avoidance and Minimization Measures*** section.

Implementation of the proposed Project could potentially impact individual and/or nesting

resident or migratory bird species, should they become established within the proposed Project site prior to Project implementation. Impacts to migratory bird species could occur through crushing by construction and drilling equipment during implementation of proposed Project activities. Actively nesting birds could also be affected due to noise and vibration from proposed Project activities, if nests are located closer than 250 feet to the proposed Project site. Project related noise and vibration could cause disruption of breeding behavior and the abandonment of active nest sites. Impacts to these species would be considered significant. In the event that nesting birds are present or become established in the proposed Project site, avoidance and minimization measures to protect these species from potential impacts are described further in the ***Proposed Avoidance and Minimization Measures*** section.

Direct mortality or injury to sensitive animal populations could occur from earth-moving activities, assuming that sensitive animal populations become established prior to or during project implementation. Avoidance and minimization measures to protect sensitive animal species from potential impacts are described further in the ***Proposed Avoidance and Minimization Measures*** section. Pre-disturbance surveys are recommended prior to surface disturbance associated with well site preparation (i.e., grading and compacting) to determine whether conditions have changed in the proposed Project site.

If the proposed oil and gas well proves productive, production equipment would be installed on site. Special-status species could potentially be impacted during this phase of the Project. Direct mortality, injury, or crushing could occur from vehicles or equipment used for production equipment installation, assuming a sensitive species or population becomes established in the Project site. Mitigation measures to protect sensitive and special-status plant and animals from potential impacts during this phase are described below.

Direct mortality or injury to common wildlife and plant populations could occur during ground disturbance activities associated with implementation of the proposed project. Small vertebrate, invertebrate, and plant species are particularly prone to impact during project implementation because they are much less mobile, and cannot easily move out of the path of project activities. Other more mobile wildlife species, such as most birds and larger mammals, can avoid project-related activities by moving to other adjacent areas temporarily. Increased human activity and vehicle traffic in the vicinity may disturb some wildlife species. However, common wildlife species have likely become acclimated to on-going agricultural activities. Because common wildlife species found in the proposed Project site are locally and regionally common, potential impacts to these resources are considered less than significant. Therefore, no avoidance or minimization measures are proposed at this time for common wildlife and plants.

Traffic in the Project vicinity consists predominantly of agricultural equipment. A short-term increase in vehicle traffic is anticipated during Project implementation, which will result in a short-term increase in associated noise, which may cause temporary disturbance to common wildlife species. Those species observed during biological surveys appear to have acclimated to ongoing agricultural activities near the proposed Project site.

PROPOSED AVOIDANCE AND MINIMIZATION MEASURES

Implementation of the proposed avoidance and minimization measures is recommended to avoid or reduce potential impacts to special-status species. The avoidance and minimization measures presented below would be implemented by KEBO as Operational Procedures for the proposed Project.

1. Environmental Awareness Training will be presented to all personnel working in the field on the proposed Project site. Training shall consist of a brief presentation in which a biologist knowledgeable of endangered species biology and legislative protections will explain endangered and threatened species concerns. Training will include a discussion of special-status plants and wildlife species. Species biology, habitat needs, status under the Endangered Species Act, and protection under the Migratory Bird Treaty Act will be discussed. In addition, measures being incorporated for the protection of these species and their habitats will also be discussed.
2. A biological pre-disturbance survey of the proposed Project will be conducted by a qualified biologist no more than 14 days prior to starting Project activities. If no work occurs within 14 days of surveys, additional surveys may be required so they remain current.
 - a. If no special-status species are identified within the Project site, and conditions have not changed, then construction activities may proceed.
 - b. If special-status species or habitat features (i.e., burrows, dens, nests, etc.) are observed during pre-disturbance surveys, additional surveys may be required and other avoidance and mitigation measures may apply.
3. If ground disturbing activities are planned to occur during the breeding season of migratory bird or raptor species (February through mid-September), surveys for nesting birds will be conducted in the Project. Pre-disturbance surveys for nesting birds will be conducted by a qualified biologist no more than 14 days prior to the start of Project activities. If Project activities do not commence within 14 days of nesting bird surveys, additional surveys may be required to remain current.
 - a. If no active nest(s) are found in the Project or buffer areas, then Project activities may proceed and no further mitigation measures will be required.
 - b. If active nest(s) of migratory birds and non-listed raptors are found, then exclusion zones will be established a minimum of 250-feet around a nest. Project activities will avoid disturbance within the exclusion zone during the nesting season.
4. A qualified biologist will be present during initial surface disturbance to serve as a biological monitor for the Project.
5. Project site boundaries shall be clearly delineated by stakes and /or flagging to minimize inadvertent degradation or loss of adjacent lands during Project operations. Staff and/or its

- contractors shall post signs and/or place fencing around the proposed Project site to restrict access of vehicles and equipment outside the Project boundary.
6. A Project representative will establish restrictions on Project-related traffic to approved access routes and the proposed well site. Off-road traffic outside of the designated Project area is prohibited.
 7. Project-related traffic shall observe a 20 mph speed limit, except on County roads and State highways to avoid impacts to special-status wildlife species.
 8. Hazardous materials, fuels, lubricants, and solvents that spill accidentally during project-related activities shall be cleaned up and removed from the proposed Project site as soon as possible according to applicable federal, state and local regulations.
 9. All food-related trash items such as wrappers, cans, bottles or food scraps generated during Project activities will be disposed of only in closed containers and regularly removed from the proposed Project site. No deliberate feeding of wildlife will be allowed.
 10. To prevent harassment or mortality of wildlife species via predation, or destruction of their dens or nests, no domestic pets will be permitted on the Project.
 11. KEBO will implement the following measures (measures 11-19) contained in the USFWS's *Standardized Recommendations For Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011):
 - a) For kit fox dens within 200 feet of proposed construction area(s), exclusion zones will be established prior to construction by a qualified biologist. Exclusion zones will be roughly circular with a radius of the following distances measured outward from the entrance:

Potential den	50 feet
Atypical den	50 feet
Known den	100 feet
Natal/pupping den	UWFWS and CDFW must be contacted
(occupied <u>and</u> unoccupied)	
 - b) Protective exclusion zones can be placed around all known and potential dens which occur outside the project footprint (conversely, the project boundary can be demarcated).
 - c) To ensure protection of known dens, exclusion zones should be demarcated by fencing that encircles each den at the appropriate distance and does not prevent access to the den by kit foxes. Acceptable fencing includes untreated wood particle-board, silt fencing, or orange construction fencing, as long as it has opening for kit fox ingress/egress and keeps humans and equipment out.

- d) Exclusion zone barriers shall be maintained until all construction related or operational disturbances have been terminated. At that time all fencing shall be removed to avoid attracting subsequent attention to the dens.
 - e) For potential and/or atypical dens, placement of 4-5 flagged stakes 50 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required, but the exclusion zone must be observed.
 - f) Only essential vehicle operation on existing roads and foot traffic should be permitted. Otherwise, all construction, vehicle operation, material storage, or any type of surface-disturbing activity should be prohibited or greatly restricted within the exclusion zones.
12. If a natal/pupping den is discovered within the proposed Project site or within 200-feet of the Project boundaries, the USFWS and CDFW shall be immediately notified and under no circumstances should the den be disturbed or destroyed without prior authorization. If the pre-disturbance survey reveals an active natal pupping den or new information, KEBO should contact the USFWS and CDFW immediately for guidance.
13. Destruction of any known or natal/pupping kit fox den requires take authorization/permit from the USFWS and CDFW. Limited destruction of kit fox dens may be allowed, if avoidance is not a reasonable alternative, provided the following procedures are observed:
- a. Known dens occurring within the footprint of the Project must be monitored for three (3) consecutive days with tracking medium or an infra-red camera beam to determine the current use. If no kit fox activity is observed during this period, the den(s) should be destroyed immediately to preclude subsequent use.
 - b. If kit fox activity is observed at the den(s) during this period, the den(s) should be monitored for at least five (5) consecutive nights from the time of the observation to allow any resident animal to move to another den during its normal activity. Only when the den(s) are determined unoccupied may the den(s) be excavated.
 - c. Destruction of the den(s) should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den(s) should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter to use the den(s) during the construction period. If at any point during excavation, a kit fox is discovered inside the den(s), the excavation activity shall cease immediately and monitoring the den as described above should resume. Destruction of the den(s) may be completed when, in the judgment of the biologist, the animal has escaped without further disturbance, from the partially destroyed den(s).
14. Potential dens occurring within the footprint of the project or within 50 feet must be monitored for three (3) consecutive days with tracking medium or an infra-red camera beam to determine the current use. If no kit fox activity is observed during this period, the den(s) should be destroyed immediately to preclude subsequent use.

15. Destruction of the den(s) should be accomplished by careful excavation until it is certain that no kit foxes are inside. The den(s) should be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter to use the den during the construction period. If at any point during excavation, a kit fox is discovered inside the den(s), the excavation activity shall cease immediately and monitoring the den(s) should resume, as described above. Destruction of the den may be completed when, in the judgment of the biologist, the animal has escaped without further disturbance, from the partially destroyed den.
16. If any kit fox den is considered to be a potential den, but is later determined during monitoring or destruction to be currently, or previously used by kit fox (e.g., if kit fox sign is found inside), then all construction activities shall cease and the USFWS and CDFW shall be notified immediately.
17. To prevent entrapment of animals during construction, all excavated steep-walled holes or trenches less than five (5) feet in depth will be covered at the close of each working day with plywood or similar material. For trenches that cannot be closed daily, one or more escape ramps constructed of earthen fill or wooden planks no less than 10 inches in width will be installed and secured to the top for stability. Ramps will be located at no greater than 1,000-foot intervals (for pipelines and trenches) and at no less than 45-degree angles. All excavations greater than five (5) feet in depth will be covered at the end of each work day and when not being worked on. All covered and open excavations will be inspected at the beginning and end of each day (including non-work days).
18. Immediately before such holes or trenches are filled they will be thoroughly inspected for trapped animals. Any animals discovered that do not escape on their own immediately will be removed from the trench or hole by a qualified biologist and allowed to escape unimpeded. All discoveries of special-status animals in excavations or trenches will be reported to the CDFW and/or USFWS within 24 hours of the discovery.
19. All pipes, culverts, or similar structures stored at the proposed Project overnight having a diameter of four (4) inches or greater will be inspected thoroughly for wildlife species before being buried, capped, or otherwise used or moved in any way. Pipes laid in trenches overnight will be capped. If during Project implementation a wildlife species is discovered inside a pipe, that segment of pipe will not be moved or, if necessary, moved only once to remove it from the path of Project activity, until the wildlife species has escaped.
20. KEBO should designate a Project representative as the contact for any employee or contractor who finds a dead, injured, or entrapped special-status wildlife species. If any special-status species or migratory birds are found dead, injured, or entrapped in the proposed Project site, the CDFW and/or USFWS will be notified within 24 hours.

CONCLUSION

The proposed Project is consistent with the Tulare County General Plan Framework Concept 4: Natural and Cultural Resources of the Tulare County General Plan (Tulare County 2012); the County will ensure that development occurs in a manner that limits impacts to natural and cultural resources through the implementation of its Goals and Policies and through proper site planning and design techniques. Additionally, the Tulare County General Plan Environmental Resource Management sections (ERM 3.3, ERM 3.4 and ERM 3.5) state that the County shall allow oil and gas extraction activities and facilities that can be demonstrated to not have a significant adverse effect on surrounding or adjacent land.

No sensitive plant or wildlife species were observed during biological surveys and no special-status plant or animal species have been recorded within the boundaries of the proposed Project site. Special-status species that have been historically documented in the CNDDDB in proximity to the proposed Project site include San Joaquin kit fox, Western spadefoot, California jewelflower, and San Joaquin adobe sunburst. These species were recorded in areas of habitat that supported natural lands and were made prior to agricultural conversion (CDFW 2019).

Based on known range and current distribution, no additional surveys are recommended or required for California red-legged frog, or giant garter snake. The proposed Project site does not support suitable habitat (vernal pools) for vernal pool fairy shrimp or Western spadefoot. No small mammal burrows suitable for potential use by blunt-nosed leopard lizards or Tipton kangaroo rat were observed in the proposed Project site. This determination, that the proposed Project site does not contain suitable habitat and lacks features (water, vegetation composition, structure, burrows, dens, etc.) and elements (i.e., prey) required by species, is based on results of biological surveys and our habitat assessment. Accordingly, no specific avoidance or mitigation measures are proposed for these species.

Special-status plants are not expected to be present or become established in the proposed Project site; this determination is based on past land use and current conditions of the proposed Project site. Based on known range and current distribution, the Project is not proposed in a locale where California jewelflower, recurved larkspur, or San Joaquin adobe sunburst have been documented. Furthermore, the Project site lacks clay soils that San Joaquin adobe sunburst requires. Accordingly, no specific avoidance or mitigation measures are proposed for special-status plants.

Based on biological surveys for the proposed Project, Booher Consulting, LLC determined that there is potential for San Joaquin kit fox, Lawrence's goldfinch, and tricolored blackbird to travel through and/or forage in the Project site. As a result of mobility, the occurrence of these species cannot be discounted. The Project will result in loss of 0.91 acres of annual grassland habitat, and two (2) burrows that represent potential for San Joaquin kit fox will be impacted during site preparation. Pre-disturbance surveys, nesting bird surveys (season specific), and potential den monitoring is required prior to initial surface disturbance. If the proposed avoidance and minimization measures recommended in this report are implemented by KEBO as Operational Procedures for this Project, impacts to special-status wildlife species and sensitive migratory birds will be avoided.

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APPENDIX A
REPRESENTATIVE PHOTOGRAPHS



Photograph 1

View north from the proposed KEBO CRPC et. al. #B-1 Project site.



Photograph 2

View south of the proposed KEBO CRPC et. al. #B-1 Project site.



Photograph 3

View east of the proposed KEBO CRPC et. al. #B-1 Project site.



Photograph 4

View west of the proposed KEBO CRPC et. al. #B-1 Project site.



Photograph 5

View south along Road 208 which provides access to the proposed Project site.



Photograph 6

View west along Avenue 40, which provides access to the proposed Project site.



Photograph 7

View south from Avenue 40, down an existing farm road that will be used for Project access.



Photograph 8

View north from an existing farm road that will be used for Project access.



Photograph 9

View west of the proposed access route to the CRPC et. al. #B-1 well site.



Photograph 10

View east of the proposed access route that will be widened.



Photograph 11

A potential San Joaquin kit fox den observed in the proposed Project site.



Photograph 12

General conditions of the former Richgrove Landfill site, where the Project is proposed.

APPENDIX D

**PHASE I SURVEY,
KEBO OIL & GAS CRPC #1 PROJECT, TULARE
COUNTY, CALIFORNIA**

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MANAGEMENT SUMMARY

An intensive Phase I survey was conducted for the Kebo Oil & Gas CRPC #1 Project, Tulare County, California. The Project study area is located approximately 4.5-miles (mi) north of the community of Richgrove, in Section 12 (T24S/R26E; MDBM). ASM Affiliates, Inc., conducted this study, with David S. Whitley, Ph.D., RPA, serving as principal investigator. The study was undertaken to assist with compliance with the California Environmental Quality Act (CEQA).

A records search of site files and maps was conducted at the Southern San Joaquin Valley Archaeological Information Center, California State University, Bakersfield. A Sacred Lands File records search was also received from the Native American Heritage Commission (NAHC). Tribal organizations on the NAHC contact list were contacted by letter to determine whether tribal cultural resources are present within the study area, with follow-up phone calls one month later. These investigations determined that the study area had not been previously surveyed and that no historical or tribal cultural resources were known to exist within or within a half-mile of it.

The Phase I survey fieldwork was conducted in August 2019 with parallel transects spaced at 15-meter intervals walked along the approximately 52-acres (ac) study area, which is very heavily disturbed and includes the White River Landfill, established in the early 1960s. No cultural resources of any kind were identified within the study area. Based on these results, the Kebo Oil & Gas CRPC #1 Project does not have the potential to result in significant impacts historical resources, and no additional archaeological work is recommended.

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1. INTRODUCTION AND REGULATORY CONTEXT

ASM Affiliates, Inc., was retained by Booher Consulting LLC to conduct an intensive Phase I cultural resources survey for the Kebo Oil & Gas CRPC #1 Project, Tulare County, California (Figure 1). The study was undertaken to assist with compliance with CEQA. The investigation was conducted, specifically, to ensure that significant impacts to historical resources do not occur as a result of project construction.

This current study included:

- A background records search and literature review to determine if any known cultural resources were present in the project zone and/or whether the area had been previously and systematically studied by archaeologists;
- An on-foot, intensive inventory of the study area to identify and record previously undiscovered cultural resources and to examine known sites; and
- A preliminary assessment of any such resources found within the subject property.

David S. Whitley, Ph.D., RPA, served as principal investigator and Robert Azpitarte, B.A., ASM Associate Archaeologist, conducted the fieldwork.

This document constitutes a report on the Phase I survey. Subsequent chapters provide background to the investigation, including historic context studies; the findings of the archival records search; Native American outreach; a summary of the field surveying techniques employed; and the results of the fieldwork. We conclude with management recommendations for the study area.

1.1 PROJECT LOCATION AND DESCRIPTION

The project study area is located in Section 12, (T24S/R26E; MDBM), about 4.5-mi south of the community of Richgrove. The channelized White River and levee are located immediately south of the southern study area boundary. This places the project area on the open flats of the San Joaquin Valley. Elevation within the project area, which is flat, varies from 451-feet (ft) to 458-ft above mean sea level (amsl). The project area currently contains the White River Landfill and is very heavily disturbed. The project area totals approximately 52-acres (ac). The proposed Project consists of the construction of a well on the western half of the landfill.

1.2 REGULATORY CONTEXT

1.2.1 CEQA

CEQA is applicable to discretionary actions by state or local lead agencies. Under CEQA, lead agencies must analyze impacts to cultural resources. Significant impacts under CEQA occur when “historically significant” or “unique” cultural resources are adversely affected, which occurs when such resources could be altered or destroyed through project implementation. Historically

significant cultural resources are defined by eligibility for or by listing in the California Register of Historical Resources (CRHR). In practice, the federal NRHP criteria (below) for significance applied under Section 106 are generally (although not entirely) consistent with CRHR criteria (see PRC § 5024.1, Title 14 CCR, Section 4852 and § 15064.5(a)(3)).

Significant cultural resources are those archaeological resources and historical properties that:

- (A) Are associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- (B) Are associated with the lives of persons important in our past;
- (C) Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or
- (D) Have yielded, or may be likely to yield, information important in prehistory or history.

Unique resources under CEQA, in slight contrast, are those that represent:

An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC § 21083.2(g)).

Preservation in place is the preferred approach under CEQA to mitigating adverse impacts to significant or unique cultural resources.

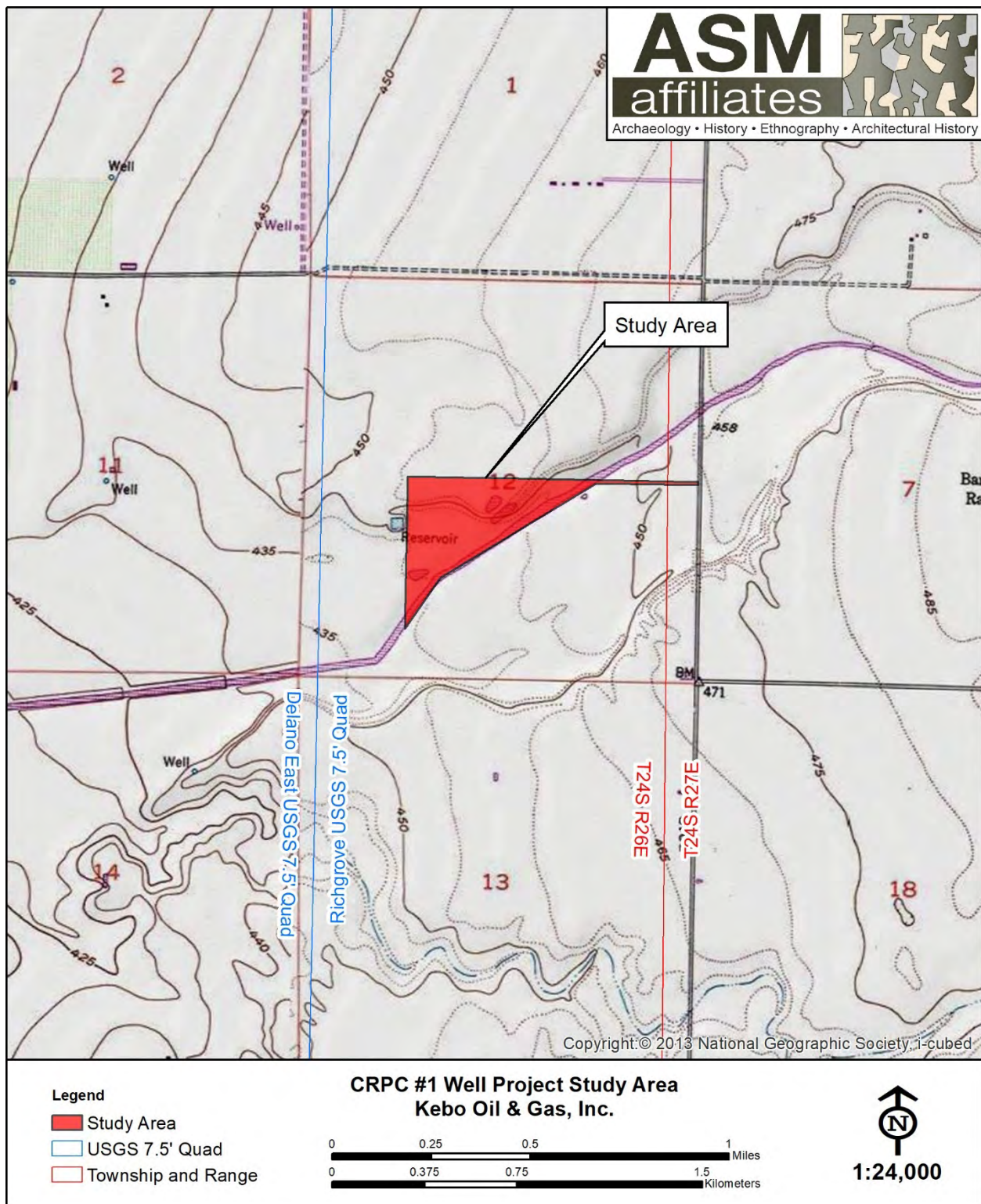


Figure 1. Location of the Kebo CRPC #1 Project Study Area, Tulare County, California.

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2. ENVIRONMENTAL AND CULTURAL BACKGROUND

2.1 ENVIRONMENTAL BACKGROUND AND GEOARCHAEOLOGICAL SENSITIVITY

As noted above, the study area is located between 451 and 458-ft elevation on the open flats of the San Joaquin Valley, north of Richmond. The study area is situated immediately north of the channelized White River, which itself is roughly 0.25-mi north of the original river course. This river flows entirely within the county of Tulare and is diverted into irrigation canals and ditches near the Kern and Tulare County lines.

Prior to the appearance of agriculture, starting in the nineteenth century, this location would have been prairie grasslands, grading into tree savannas in the foothills to the east (Preston 1981). Historically, and likely prehistorically, riparian environments would have been present along the drainages, waterways and marshes. The study area and immediate surroundings have been farmed and grazed for many years and no native vegetation is present. The White River Pit Landfill was created in the study area circa 1963, further disturbing this location. Perennial bunchgrasses such as purple needlegrass and nodding needlegrass most likely would have been the dominant plant cover in the study area prior to cultivation.

The study area falls within the White River Fan. According to the geoarchaeological model developed by Meyer et al. (2010), the study area has a very low potential for buried archaeological deposits, especially given that it has been highly disturbed by grading and dumping. Buried sites and cultural resources are therefore considered to be unlikely within the Project study area.

2.2 ETHNOGRAPHIC BACKGROUND

Penutian-speaking Yokuts tribal groups occupied the southern San Joaquin Valley region and much of the nearby Sierra Nevada. Ethnographic information about the Yokuts was collected primarily by Powers (1971, 1976 [originally 1877]), Kroeber (1925), Gayton (1930, 1948), Driver (1937), Latta (1977) and Harrington (n.d.). For a variety of historical reasons, existing research information emphasizes the central Yokuts tribes who occupied both the valley and particularly the foothills of the Sierra. The northernmost tribes suffered from the influx of Euro-Americans during the Gold Rush and their populations were in substantial decline by the time ethnographic studies began in the early twentieth century. In contrast, the southernmost tribes were partially removed by the Spanish to missions and eventually absorbed into multi-tribal communities on the Sebastian Indian Reservation (on Tejon Ranch), and later the Tule River Reservation and Santa Rosa Rancheria to the north. The result is an unfortunate scarcity of ethnographic detail on southern Valley tribes, especially in relation to the rich information collected from the central foothills tribes where native speakers of the Yokuts dialects are still found. Regardless, the general details of indigenous life-ways were similar across the broad expanse of Yokuts territory,

particularly in terms of environmentally influenced subsistence and adaptation and with regard to religion and belief, which were similar everywhere.

Following Kroeber (1925: Plate 47), the study area most likely lies in Koyote Yokuts territory. The principal historic village for this group was *Chokowisho*, located on the north bank of the Tule River, a short distance east of Porterville (Kroeber 1925: Plate 47; Latta 1977:195). No historic villages are recorded for the immediate project area, per se, by Kroeber (1925) or by Latta (1977), however.

The Yokuts settlement pattern was largely consistent, regardless of specific tribe involved. Winter villages were typically located along lakeshores and major stream courses (as these existed circa AD 1800), with dispersal phase family camps located at elevated spots on the valley floor and near gathering areas in the foothills.

Most Yokuts groups, again regardless of specific tribal affiliation, were organized as a recognized and distinct tribelet; a circumstance that almost certainly pertained to the tribal groups noted above. Tribelets were land-owning groups organized around a central village and linked by shared territory and descent from a common ancestor. The population of most tribelets ranged from about 150 to 500 peoples (Kroeber 1925).

Each tribelet was headed by a chief who was assisted by a variety of assistants, the most important of whom was the *winatum*, a herald or messenger and assistant chief. A shaman also served as religious officer. While shamans did not have any direct political authority, as Gayton (1930) has illustrated, they maintained substantial influence within their tribelet.

Shamanism is a religious system common to most Native American tribes. It involves a direct and personal relationship between the individual and the supernatural world enacted by entering a trance or hallucinatory state (usually based on the ingestion of psychotropic plants, such as jimsonweed or more typically native tobacco). Shamans were considered individuals with an unusual degree of supernatural power, serving as healers or curers, diviners, and controllers of natural phenomena (such as rain or thunder). Shamans also produced the rock art of this region, depicting the visions they experienced in vision quests believed to represent their spirit helpers and events in the supernatural realm (Whitley 1992, 2000).

The centrality of shamanism to the religious and spiritual life of the Yokuts was demonstrated by the role of shamans in the yearly ceremonial round. The ritual round, performed the same each year, started in the spring with the jimsonweed ceremony, followed by rattlesnake dance and (where appropriate) first salmon ceremony. After returning from seed camps, fall rituals began in the late summer with the mourning ceremony, followed by first seed and acorn rites and then bear dance (Gayton 1930:379). In each case, shamans served as ceremonial officials responsible for specific dances involving a display of their supernatural powers (Kroeber 1925).

Subsistence practices varied from tribelet to tribelet based on the environment of residence. Throughout Native California, and Yokuts territory in general, the acorn was a primary dietary component, along with a variety of gathered seeds. Valley tribes augmented this resource with lacustrine and riverine foods, especially fish and wildfowl. As with many Native California tribes,

the settlement and subsistence rounds included the winter aggregation into a few large villages, where stored resources (like acorns) served as staples, followed by dispersal into smaller camps, often occupied by extended families, where seasonally available resources would be gathered and consumed.

Although population estimates vary and population size was greatly affected by the introduction of Euro-American diseases and social disruption, the Yokuts were one of the largest, most successful groups in Native California. Cook (1978) estimates that the Yokuts region contained 27 percent of the aboriginal population in the state at the time of contact; other estimates are even higher. Many Yokuts people continue to reside in the southern San Joaquin Valley today.

2.3 PRE-CONTACT ARCHAEOLOGICAL BACKGROUND

The southern San Joaquin Valley region has received minimal archaeological attention compared to other areas of the state. In part, this is because the majority of California archaeological work has concentrated in the Sacramento Delta, Santa Barbara Channel, and central Mojave Desert areas (see Moratto 1984). Although knowledge of the region's prehistory is limited, enough is known to determine that the archaeological record is broadly similar to south-central California as a whole (see Gifford and Schenk 1926; Hewes 1941; Wedel 1941; Fenenga 1952; Elsasser 1962; Fredrickson and Grossman 1977; Schiffman and Garfinkel 1981). Based on these sources, the general prehistory of the region can be outlined as follows.

Initial occupation of the region occurred at least as early as the *Paleoindian Period*, or prior to about 10,000 years before present (YBP). Evidence of early use of the region is indicated by characteristic fluted and stemmed points found around the margin of Tulare Lake, in the foothills of the Sierra, and in the Mojave Desert proper.

Both fluted and stemmed points are particularly common around lake margins, suggesting a terminal Pleistocene/early Holocene lakeshore adaptation similar to that found throughout the far west at the same time; little else is known about these earliest peoples. Over 250 fluted points have been recovered from the Witt Site (CA-KIN-32), located along the western shoreline of ancient Tulare Lake north of the study area, demonstrating the importance of this early occupation in the San Joaquin Valley specifically (see Fenenga 1993). Additional finds consist of a Clovis-like projectile point discovered in a flash-flood cut-bank near White Oak Lodge in 1953 on Tejon Ranch (Glennan 1987a, 1987b). More recently, a similar fluted point was found near Bakersfield (Zimmerman et al. 1989), and a number are known from the Edwards Air Force Base and Boron area of the western Mojave Desert. Although human occupation of the state is well-established during the Late Pleistocene, relatively little can be inferred about the nature and distribution of this occupation with a few exceptions. First, little evidence exists to support the idea that people at that time were big-game hunters, similar to those found on the Great Plains. Second, the western Mojave Desert evidence suggests small, very mobile populations that left a minimal archaeological signature. The evidence from the ancient Tulare Lake shore, in contrast, suggests much more substantial population and settlements which, instead of relying on big game hunting, were tied to the lacustrine lake edge. Variability in subsistence and settlement patterns is thus apparent in California, in contrast to the Great Plains.

Substantial evidence for human occupation across California, however, first occurs during the middle Holocene, roughly 7,500 to 4,000 YBP. This period is known as the *Early Horizon*, or alternatively as the Early Millingstone along the Santa Barbara Channel. In the south, populations concentrated along the coast with minimal visible use of inland areas. Adaptation emphasized hard seeds and nuts with tool-kits dominated by mullers and grindstones (manos and metates). Additionally, little evidence for Early Horizon occupation exists in most inland portions of the state, partly due to a severe cold and dry paleoclimatic period occurring at this time, although a site deposit dating to this age has been identified along the ancient Buena Vista shoreline in Kern County to the south (Rosenthal et al. 2007). Regardless of specifics, Early Horizon population density was low with a subsistence adaptation more likely tied to plant food gathering than hunting.

Environmental conditions improved dramatically after about 4,000 YBP during the *Middle Horizon* (or Intermediate Period). This period is known climatically as the Holocene Maximum (circa 3,800 YBP) and was characterized by significantly warmer and wetter conditions than previously experienced. It was marked archaeologically by large population increase and radiation into new environments along coastal and interior south-central California and the Mojave Desert (Whitley 2000). In the Delta region to the north, this same period of favorable environmental conditions was characterized by the appearance of the Windmiller culture which exhibited a high degree of ritual elaboration (especially in burial practices) and perhaps even a rudimentary mound-building tradition (Meighan, personal communication, 1985). Along with ritual elaboration, Middle Horizon times experienced increasing subsistence specialization, perhaps correlating with the appearance of acorn processing technology. Penutian speaking peoples (including the Yokuts) are also posited to have entered the state roughly at the beginning of this period and, perhaps to have brought this technology with them (cf. Moratto 1984). Likewise, it appears the so-called "Shoshonean Wedge" in southern California, the Takic speaking groups that include the Gabrielino/Fernandeño, Tataviam and Kitanemuk, may have moved into the region at that time (Sutton 2009, rather than at about 1500 YBP as first suggested by Kroeber (1925).

Evidence for Middle Horizon occupation of interior south-central California is substantial. For example, in northern Los Angeles County along the upper Santa Clara River, to the south of the San Joaquin Valley, the Agua Dulce village complex indicates occupation extending back to the Intermediate Period, when the population of the village may have been 50 or more people (King et al n.d.). Similarly, inhabitation of the Hathaway Ranch region near Lake Piru, and the Newhall Ranch near Valencia, appears to date to the Intermediate Period (W & S Consultants 1994). To the west, little or no evidence exists for pre-Middle Horizon occupation in the upper Sisquoc and Cuyama River drainages; populations first appear there at roughly 3,500 YBP (Horne 1981). The Carrizo Plain, the valley immediately west of the San Joaquin, experienced a major population expansion during the Middle Horizon (W & S Consultants 2004; Whitley et al. 2007), and recently collected data indicates the Tehachapi Mountains region was first significantly occupied during the Middle Horizon (W & S Consultants 2006). A parallel can be drawn to the inland Ventura County region where a similar pattern has been identified (Whitley and Beaudry 1991), as well as the western Mojave Desert (Sutton 1988a, 1988b), the southern Sierra Nevada (W & S Consultants 1999), and the Coso Range region (Whitley et al. 1988). In all of these areas a major expansion in settlement, the establishment of large site complexes and an increase in the range of environments exploited appear to have occurred sometime roughly around 4,000 years ago. Although most

efforts to explain this expansion have focused on local circumstances and events, it is increasingly apparent this was a major southern California-wide occurrence and any explanation must be sought at a larger level of analysis (Whitley 2000). Additionally, evidence from the Carrizo Plain suggests the origins of the tribelet level of political organization developed during this period (W & S Consultants 2004; Whitley et al. 2007). Whether this same demographic process holds for the southern San Joaquin Valley, including the study area, is yet to be determined.

The beginning of the *Late Horizon* is set variously at 1,500 and 800 YBP, with a growing archaeological consensus for the shorter chronology. Increasing evidence suggests the importance of the Middle-Late Horizons transition (AD 800 to 1200) in the understanding of south-central California prehistory. This corresponds to the so-called Medieval Climatic Anomaly, followed by the Little Ice Age, and this general period of climatic instability extended to about A.D. 1860. It included major droughts matched by intermittent “mega-floods,” and resulted in demographic disturbances across much of the west (Jones et al. 1999). It is believed to have resulted in major population decline and abandonments across south-central California, involving as much as 90% of the interior populations in some regions, including the Carrizo Plain (Whitley et al. 2007). It is not clear whether site abandonment was accompanied by a true reduction in population or an agglomeration of the same numbers of peoples into fewer but larger villages in more favorable locations. Population along the Santa Barbara coast appears to have spiked at about the same time that it collapsed on the Carrizo Plain (ibid). Along Buena Vista Lake, in Kern County, population appears to have been increasingly concentrated towards the later end of the Medieval Climatic Anomaly (Culleton 2006), and population intensification also appears to have occurred in the well-watered Tehachapi Mountains during this same period (W & S Consultants 2006).

What is then clear is that Middle Period villages and settlements were widely dispersed across the south-central California landscape, including in the Sierras and the Mojave Desert. Many of these sites are found at locations that lack existing or known historical fresh water sources. Late Horizon sites, in contrast, are typically concentrated in areas where fresh water was available during the historical period, if not currently.

One extensively studied site that shows evidence of intensive occupation during the Middle-Late Horizons transition (~1,500 – 500 YBP) is the Redtfeldt Mound (CA-KIN-66/H), located northwest of the current study area, near the north shore of ancient Tulare Lake. There, Siefkin (1999) reported on human burials and a host of artifacts and ecofacts excavated from a modest-sized mound. He found that both Middle Horizon and Middle-Late Horizons transition occupations were more intensive than Late Horizon occupations, which were sporadic and less intensive (Siefkin 1999:110-111).

The Late Horizon can then be understood as a period of recovery from a major demographic collapse. One result is the development of regional archaeological cultures as the precursors to ethnographic Native California; suggesting that ethnographic life-ways recorded by anthropologists extend roughly 800 years into the past.

The position of southern San Joaquin Valley prehistory relative to patterns seen in surrounding areas is still somewhat unknown. The presence of large lake systems in the valley bottoms appears to have mediated some of the desiccation seen elsewhere. But, as the reconstruction of Soda Lake

in the nearby Carrizo Plain demonstrates (see Whitley et al. 2007) environmental perturbations had serious impacts on lake systems too. Identifying certain of the prehistoric demographic trends for the southern San Joaquin Valley, and determining how these trends (if present) correlate with those seen elsewhere, is a current important research objective.

2.4 HISTORICAL BACKGROUND

Spanish explorers first visited the San Joaquin Valley in 1772, but its lengthy distance from the missions and presidios along the Pacific Coast delayed permanent settlement for many years, including during the Mexican period of control over the Californian region. In the 1840s, Mexican rancho owners along the Pacific Coast allowed their cattle to wander and graze in the San Joaquin Valley (JRP Historical Consulting 2009). The Mexican government granted the first ranchos in the southern part of the San Joaquin Valley in the early 1840s, but these did not result in permanent settlement. It was not until the annexation of California in 1848 that the exploitation of the southern San Joaquin Valley began (Pacific Legacy 2006).

The discovery of gold in northern California in 1848 resulted in a dramatic increase of population, consisting in good part of fortune seekers and gold miners, who began to scour other parts of the state. After 1851, when gold was discovered in the Sierra Nevada Mountains in eastern Kern County, the population of the area grew rapidly. Some new immigrants began ranching in the San Joaquin Valley to supply the miners and mining towns. Ranchers grazed cattle and sheep, and farmers dry-farmed or used limited irrigation to grow grain crops, leading to the creation of small agricultural communities throughout the valley (JRP Historical Consulting 2009).

After the American annexation of California, the southern San Joaquin Valley became significant as a center of food production for this new influx of people in California. The expansive unfenced and principally public foothill spaces were well suited for grazing both sheep and cattle (Boyd 1997). As the Sierra Nevada gold rush presented extensive financial opportunities, ranchers introduced new breeds of livestock, consisting of cattle, sheep and pig (Boyd 1997).

With the increase of ranching in the southern San Joaquin came the dramatic change in the landscape, as non-native grasses more beneficial for grazing and pasture replaced native flora (Preston 1981). After the passing of the Arkansas Act in 1850, efforts were made to reclaim small tracts of land in order to create more usable spaces for ranching. Eventually, as farming supplanted ranching as a more profitable enterprise, large tracts of land began to be reclaimed for agricultural use, aided in part by the extension of the railroad in the 1870s (Pacific Legacy 2006).

Following the passage of state wide ‘No-Fence’ laws in 1874, ranching practices began to decline, while farming expanded in the San Joaquin Valley in both large land holdings and smaller, subdivided properties. As the farming population grew, so did the demand for irrigation. Settlers began reclamation of swampland in 1866, and built small dams across the Kern River to divert water into the fields. By 1880, 86 different groups were taking water from the Kern River. Ten years later, 15 major canals provided water to thousands of acres in Kern County.

During the period of reclaiming unproductive land in the southern San Joaquin Valley, grants were given to individuals who had both the resources and the finances to undertake the operation alone.

One small agricultural settlement, founded by Colonel Thomas Baker in 1861 after procuring one such grant, took advantage of reclaimed swampland along the Kern River. This settlement became the City of Bakersfield in 1869, and quickly became the center of activity in the southern San Joaquin Valley, and in the newly formed Kern County. Located on the main stage road through the San Joaquin Valley, the town became a primary market and transportation hub for stock and crops, as well as a popular stopping point for travelers on the Los Angeles and Stockton Road. The Southern Pacific Railroad reached the Bakersfield area in 1873, connecting it with important market towns elsewhere in the state, dramatically impacting both agriculture and oil production (Pacific Legacy 2006). According to General Land Office records, the Southern Pacific Railroad patented its route north of Bakersfield, through the Richgrove area, between 1874 and 1877. The railroad apparently was constructed a few years prior.

Three competing partnerships developed during this period which had a great impact on control of water, land reclamation and ultimately agricultural development in the San Joaquin Valley: Livermore and Chester, Haggin and Carr, and Miller and Lux, perhaps the most famous of the enterprises. Livermore and Chester were responsible, among other things, for developing the large Hollister plow (three feet wide by two feet deep), pulled by a 40-mule team, which was used for ditch digging. Haggin and Carr were largely responsible for reclaiming the beds of the Buena Vista and Kern lakes, and for creating the Calloway Canal, which drained through the Rosedale area in Bakersfield to Goose Lake (Morgan 1914). Miller and Lux ultimately became one of the biggest private property holders in the country, controlling the rights to over 22,000 square miles. Miller and Lux's impact extended beyond Kern County, however. They recognized early-on that control of water would have important economic implications, and they played a major role in the water development of the state. They controlled, for example, over 100 miles of the San Joaquin River with the San Joaquin and Kings River Canal and Irrigation System. They were also embroiled for many years in litigation against Haggin and Carr over control of the water rights to the Kern River. Descendants of Henry Miller continue to play a major role in California water rights, with his great grandson, George Nickel, Jr., the first to develop the concept of water banking, thus creating a system to buy and sell water (<http://exiledonline.com/california-class-war-history-meet-the-oligarch-family-thats-been-scamming-taxpayers-for-150-years-and-counting/>).

The San Joaquin Valley was dominated by agricultural pursuits until the oil boom of the early 1900s, which saw a shift in the region, as some reclaimed lands previously used for farming were leased to oil companies. Nonetheless, the shift of the San Joaquin Valley towards oil production did not halt the continued growth of agriculture (Pacific Legacy 2006). The Great Depression of the 1930s brought with it the arrival of great number of migrants from the drought-affected Dust Bowl region, looking for agricultural labor. These migrants established temporary camps in the valley, staying on long past the end of the drought and the Great Depression, eventually settling in towns such as Bakersfield where their descendants live today (Boyd 1997).

Richgrove is currently a small unincorporated residential community with approximately 3200 inhabitants. The Richgrove area developed due to the expansion of citrus orchards in the 1890s (Menefee and Dodge 1913). The development of the community apparently occurred after circa 1899, when the Visalia Water Company started providing electrical power to the region (ibid). According to historical USGS topographical quadrangles, the subdivision of the community did not occur until sometime after 1929.

2.5 RESEARCH DESIGN

2.5.1 Pre-Contact Archaeology

Previous research and the nature of the pre-contact archaeological record suggest two significant NRHP themes, both of which fall under the general Pre-Contact Archaeology area of significance. These are the Expansion of Pre-Contact Populations and Their Adaptation to New Environments; and Adaptation to Changing Environmental Conditions.

The Expansion of Pre-Contact Populations and Their Adaptation to New Environments theme primarily concerns the Middle Horizon/Holocene Maximum. Its period of significance runs from about 4,000 to 1,500 YBP. It involves a period during which the prehistoric population appears to have expanded into a variety of new regions, developing new adaptive strategies in the process.

The Adaptation to Changing Environmental Conditions theme is partly related to the Holocene Maximum, but especially to the Medieval Climatic Anomaly. The period of significance for this theme, accordingly, extends from about 4,000 to 800 YBP. This theme involves the apparent collapse of many inland populations, presumably with population movements to better environments such as the coast. It is not yet known whether the southern San Joaquin Valley, with its system of lakes, sloughs and swamps, experienced population decline or, more likely, population increase due to the relatively favorable conditions of this region during this period of environmental stress.

The range of site types that are present in this region include:

- Villages, primarily located on or near permanent water sources, occupied by large groups during the winter aggregation season;
- Seasonal camps, again typically located at water sources, occupied during other parts of the year tied to locally and seasonally available food sources;
- Special activity areas, especially plant processing locations containing bedrock mortars (BRMs), commonly (though not exclusively) near existing oak woodlands, and invariably at bedrock outcrops or exposed boulders;
- Stone quarries and tool workshops, occurring in two general contexts: at or below naturally occurring chert exposures on the eastern front of the Temblor Range; and at quartzite cobble exposures, often on hills or ridges;
- Ritual sites, most commonly pictographs (rock art) found at rockshelters or large exposed boulders, and cemeteries, both commonly associated with villages; and
- A variety of small lithic scatters (low density surface scatters of stone tools).

The first requisites in any research design are the definition of site age/chronology and site function. The ability to determine either of these basic kinds of information may vary between survey and test excavation projects, and due to the nature of the sites themselves. BRM sites

without associated artifacts, for example, may not be datable beyond the assumption that they post-date the Early Horizon and are thus less than roughly 4,000 years old.

A second fundamental issue involves the place of site in the settlement system, especially with respect to water sources. Because the locations of the water sources have sometimes changed over time, villages and camps are not exclusively associated with existing (or known historical) water sources (W&S Consultants 2006). The size and locations of the region's lakes, sloughs and delta channels, to cite the most obvious example, changed significantly during the last 12,000 years due to major paleoclimatic shifts. This altered the area's hydrology and thus prehistoric settlement patterns. The western shoreline of Tulare Lake was relatively stable, because it abutted the Kettleman Hills. But the northern, southern and eastern shorelines comprised the near-flat valley floor. Relatively minor fluctuations up or down in the lake level resulted in very significant changes in the areal expression of the lake on these three sides, and therefore the locations of villages and camps. Although perhaps not as systematic, similar changes occurred with respect to stream channels and sloughs, and potential site locations associated with them. This circumstance has implications for predicting site locations and archaeological sensitivity. Site sensitivity is then hardest to predict in the open valley floor, where changes in stream courses and lake levels occurred on numerous occasions.

Nonetheless, the position of southern San Joaquin Valley prehistory relative to the changing settlement and demographic patterns seen in surrounding areas is still somewhat unknown (cf. Siefkin 1999), including to the two NRHP themes identified above. The presence of large lake systems in the valley bottoms can be expected to have mediated some of the effects of desiccation seen elsewhere. But, as the reconstruction of Soda Lake in the nearby Carrizo Plain demonstrates (see Whitley et al. 2007), environmental perturbations had serious impacts on lake systems too. Identifying certain of the prehistoric demographic trends for the southern San Joaquin Valley, and determining how these trends (if present) correlate with those seen elsewhere, is another primary regional research objective.

Archaeological sites would primarily be evaluated for NRHP eligibility under Criterion D, research potential.

2.5.2 Historical Archaeology: Native American

Less research has been conducted on the regional historical archaeological record, both Native American and Euro-American. For Native American historical sites, the ethnographic and ethnohistoric periods in the southern San Joaquin Valley extended from first Euro-American contact, in AD 1772, to circa 1900, when tribal populations were first consolidated on reservations. The major significant historic NRHP themes during this period of significance involve the related topics of Historic-Aboriginal Archaeology, and Native American Ethnic Heritage. More specifically, these concern the Adaptation of the Indigenous Population to Euro-American Encroachment and Settlement, and their Acculturation to Western Society. These processes included the impact of missionization on the San Joaquin Valley (circa 1800 to about 1845); the introduction of the horse and the development of a San Joaquin Valley "horse culture," including raiding onto the coast and Los Angeles Basin (after about 1810); the use of the region as a refuge

for mission neophyte escapees (after 1820); responses to epidemics from introduced diseases (especially in the 1830s); armed resistance to Euro-American encroachment (in the 1840s and early 1850s); the origins of the reservation system and the development of new tribal organizations and ethnic identities; and, ultimately, the adoption of the Euro-American society's economic system and subsistence practices, and acculturation into that society.

Site types that have been identified in the region dating to the ethnographic/ethnohistoric period of significance primarily include villages and habitations, some of which contain cemeteries and rock art (including pictographs and cupules). Dispersed farmsteads, dating specifically from the reservation period or post-1853, would also be expected. The different social processes associated with this historical theme may be manifest in the material cultural record in terms of changing settlement patterns and village organization (from traditional nucleated villages to single family dispersed farmsteads); the breakdown of traditional trading networks with their replacement by new economic relationships; changing subsistence practices, especially the introduction of agriculture initially via escaped mission neophytes; the use of Euro-American artifacts and materials rather than traditional tools and materials; and, possibly, changing mortuary practices.

Inasmuch as culture change is a primary intellectual interest in archaeology, ethnographic villages and habitations may be NRHP eligible under Criterion D, research potential. Rock art sites, especially pictographs, may be eligible under Criterion C as examples of artistic mastery. They may also be eligible under Criterion A, association with events contributing to broad patterns of history. Ethnographic sites, further, may be NRHP eligible as Traditional Cultural Properties due to potential continued connections to tribal descendants, and their resulting importance in traditional practices and beliefs, including their significance for historical memory, tribal- and self-identity formation, and tribal education.

For Criteria A, C and D, eligibility requires site integrity (including the ability to convey historical association for Criterion A). These may include intact archaeological deposits for Criterion D, as well as setting and feel for Criteria C and A. Historical properties may lack physical integrity, as normally understood in heritage management, but still retain their significance to Native American tribes as Traditional Cultural Properties if they retain their tribal associations and uses.

2.5.3 Historical Archaeology: Euro-American

Approaches to historical Euro-American archaeological research relevant to the region have been summarized by Caltrans (1999, 2000, 2007, 2008). These concern the general topics of historical landscapes, agriculture and farming, irrigation (water conveyance systems), and mining. Caltrans has also identified an evaluation matrix aiding determinations of eligibility. The identified research issues include site structure and land-use (lay-out, land use, feature function); economics (self-sufficiency, consumer behavior, wealth indicators); technology and science (innovations, methods); ethnicity and cultural diversity (religion, race); household composition and lifeways (gender, children); and labor relations. Principles useful for determining the research potential of an individual site or feature are conceptualized in terms of the mnemonic AIMS-R, as follows:

1. *Association* refers to the ability to link an assemblage of artifacts, ecofacts, and other cultural remains with an individual household, an ethnic or socioeconomic group, or a specific activity or property use.
2. *Integrity* addresses the physical condition of the deposit, referring to the intact nature of the archaeological remains. In order for a feature to be most useful, it should be in much the same state as when it was deposited. However, even disturbed deposits can yield important information (e.g., a tightly dated deposit with an unequivocal association).
3. *Materials* refers to the number and variety of artifacts present. Large assemblages provide more secure interpretations as there are more datable items to determine when the deposit was made, and the collection will be more representative of the household, or activity. Likewise, the interpretive potential of a deposit is generally increased with the diversity of its contents, although the lack of diversity in certain assemblages also may signal important behavioral or consumer patterns.
4. *Stratigraphy* refers to the vertically or horizontally discrete depositional units that are distinguishable. Remains from an archaeological feature with a complex stratigraphic sequence representative of several events over time can have the added advantage of providing an independent chronological check on artifact diagnosis and the interpretation of the sequence of environmental or sociocultural events.
5. *Rarity* refers to remains linked to household types or activities that are uncommon. Because they are scarce, they may have importance even in cases where they otherwise fail to meet other thresholds of importance (Caltrans 2007:209).

For agricultural sites, Caltrans (2007) has identified six themes to guide research: Site Structure and Land Use Pattern; Economic Strategies; Ethnicity and Cultural Adaptation; Agricultural Technology and Science; Household Composition and Lifeways; and Labor History. Expected site types would include farm and ranch homesteads and facilities, line camps, and refuse dumps. In general terms, historical Euro-American archaeological sites would be evaluated for NRHP eligibility under Criterion D, research potential. However, they also potentially could be eligible under Criteria A and B for their associate values with major historical trends or individuals. Historical landscapes might also be considered.

Historical structures, which are most likely to be pertinent to the current study area, are typically evaluated for NRHP eligibility under Criteria A and/or B, for their associate values with major historical trends or individuals, and C for potential design or engineering importance.

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3. ARCHIVAL RECORDS SEARCH

3.1 ARCHIVAL RECORDS SEARCH

In order to determine whether the Project study area had been previously surveyed for cultural resources, and/or whether any such resources were known to exist within or near to it, an archival records search was conducted by the staff of the Southern San Joaquin Valley Information Center (IC) on 22 July 2007. The records search was completed to determine: (i) if prehistoric or historical archaeological sites had previously been recorded within the study areas; (ii) if the project area had been systematically surveyed by archaeologists prior to the initiation of this field study; and/or (iii) whether the region of the field project was known to contain archaeological sites and to thereby be archaeologically sensitive. Records examined included archaeological site files and maps, the NRHP, Historic Property Data File, California Inventory of Historic Resources, and the California Points of Historic Interest. The records search included the Project APE and a half-mile buffer.

According to the IC records search (Confidential Appendix A), no cultural resources had been previously recorded within the study area or within a half-mile radius of it. Only one previous study had occurred within a half-mile radius (IC report # TU-1465), with negative results.

A search of the NAHC Sacred Lands Files was also requested. According to the NAHC records, no sacred sites or tribal cultural resources are known in or near the Project study area. Letters requesting information on any tribal cultural resources were sent to organizations and individuals on the NAHC contact list (Appendix A). Follow-up phone calls were made to the contacted tribes/tribal organizations one month later. No comments were received in return.

Historical USGS topographical quadrangles and historical aerial photos were consulted to identify potential historical structures or resources within or near the study area. The study area was undeveloped until approximately 1963, when the White River Pit and Landfill was developed.

Based on the records search results, the study area appeared to have low archaeological and tribal cultural resources sensitivity.

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4. METHODS AND RESULTS

4.1 FIELD METHODS

An intensive Phase I survey of the Kebo CRPC #1 Project study area was conducted by Robert Azpitarte, B.A., ASM Associate Archaeologist/Crew Chief, on 27 August 2019. The field methods employed included intensive pedestrian examination of the ground surface for evidence of archaeological sites in the form of artifacts, surface features (such as bedrock mortars, historical mining equipment), and archaeological indicators (e.g., organically enriched midden soil, burnt animal bone); the identification and location of any discovered sites, should they be present; tabulation and recording of surface diagnostic artifacts; site sketch mapping; preliminary evaluation of site integrity; and site recording, following the California Office of Historic Preservation Instructions for Recording Historic Resources and the BLM 8100 Manual, using DPR 523 forms. Parallel survey transects spaced at 15-m apart were employed for the inventory.

4.2 SURVEY RESULTS

The study area consists of an existing landfill and pit and surrounding terrain. Ground-surface visibility was good to excellent, with low to moderate density introduced grasses in some areas. Transect spacing was reduced in these areas, with special attention paid to rodent burrows and other areas of exposed soil. The study area, however, was found to be very heavily disturbed, with evidence of extensive grading and dumping (Figure 2). This level of disturbance effectively would preclude the preservation of cultural resources.

No cultural resources of any kind, however, were identified within the Project study area.



Figure 2. Kebo CRPC #1 study area, showing extensive grading disturbance, looking southeast.

5. SUMMARY AND RECOMMENDATIONS

An intensive Phase I survey was conducted for the Kebo Oil & Gas CRPC #1 Project, Tulare County, California. A records search was conducted at the Southern San Joaquin Valley Archaeological Information Center, California State University, Bakersfield. This indicated that the study area had not been previously surveyed and that no cultural resources were known to exist within it or within a half-mile radius. The NAHC Sacred Lands files were consulted and no tribal cultural resources are known within the study area. Outreach to tribes and tribal organizations also failed to identify tribal cultural resources in or near to the APE.

The survey fieldwork was conducted on 27 August 2019, with parallel transects spaced at 15-meter intervals walked across the approximately 52-ac study area, which includes the White River Pit and Landfill, and is very highly disturbed. No cultural resources of any kind were identified within the study area.

5.1 RECOMMENDATIONS

An intensive Phase I survey demonstrated that the Kebo CRPC #1 Project study area lacks significant cultural resources. The proposed Project therefore does not have the potential to result in adverse impacts to significant historical resources, and no additional archaeological work is recommended. In the unlikely event that cultural resources are encountered during project construction or use, however, it is recommended that an archaeologist be contacted to assess the discovery.

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CONFIDENTIAL APPENDIX A

CULTURAL RESOURCES ASSESSMENT

This report contains confidential information exempt from public disclosure pursuant to:

54 USC § 307103 (National Historic Preservation Act), and/or

16 USC § 470hh (Archaeological Resources Protection Act), and/or

16 USC § 470aaa (Paleontological Resources Preservation Act), and/or

36 CFR § 296.18 (Confidentiality of Archaeological Resource Information), and/or

Gov. Code § 6254(r): California Public Records, Records exempt from disclosure requirements, Native American grave, cemetery and sacred place records, and/or

Gov. Code § 6254.10: California Public Records Act, Disclosure of records relating to archaeological site information and specified reports not required, and/or

14 CCR §15120(d): CEQA Guidelines, Contents of Environmental Impact Reports.

APPENDIX E

SAN DIEGO NATURAL HISTORY MUSEUM

7 August 2019

Dr. David Whitley
ASM Affiliates
20424 West Valley Boulevard, Suite A
Tehachapi, California 93561

RE: Paleontological Records Search – Kebo Oil & Gas, CRPC, et al., B, #1 Well

Dear Dr. Whitley:

This letter presents the results of a paleontological records search conducted for the Kebo Oil & Gas, CRPC, et al., B, #1 Well project (Project), located in the southwestern portion of Tulare County, California. The proposed well location lies approximately 6 miles southwest of Ducor, and is located on a roughly triangular parcel bordered to the southeast by the White River and on all other sides by agricultural development.

A review of published geological maps covering the Project site and surrounding area was conducted to determine the specific geologic units mapped as underlying the Project site. Each geologic unit was subsequently assigned a paleontological resource potential following guidelines developed by the Society of Vertebrate Paleontology (SVP, 2010). In addition, a search of the paleontological collection records housed at the San Diego Natural History Museum (SDNHM) was conducted in order to determine if any documented fossil collection localities occur at the Project site or within the immediate surrounding area.

Geologic Units Underlying the Project Area

Published geological reports (e.g., Bartow, 1984) covering the Project area indicate that the proposed Project has the potential to impact Pleistocene-age older alluvium. This geologic unit and its paleontological potential are summarized below.

Pleistocene older alluvium – Pleistocene-age (approximately 2.5 million to 11,700 years old) alluvial deposits (mapped by Bartow, 1984, as older alluvium, unit 2; Qoa2) underlie the proposed well location at the surface. These deposits generally consist of clay, silt, sand, and/or gravel underlying higher river terraces and older alluvial fans in this area (Bartow, 1984). The SDNHM does not have any localities from these deposits within a 1-mile radius of the Project site. In general, alluvial deposits are highly variable in composition, and fossils within such deposits are most likely to be preserved within low-energy, fine-grained strata and paleosols, rather than in high-energy conglomerates and fan conglomerates. Mammalian fossils recovered from Pleistocene-age alluvial deposits in Tulare County consist of remains of horses (*Equus* sp.), including from Delano (approximately 11 miles southeast of the Project site), Earlimart (approximately 10.5 miles west-northwest of the Project site), Tipton, Three Rivers, and Exeter; rodents (*Thomomys* sp., *Neotoma* sp. cf. *N. cinerea*) found in Kings Canyon; camel (*Camelops* sp.) found in Strathmore and Tipton; bison (*Bison antiquus*) found in White River; mammoth (*Mammuthus columbi*) found in Badger, Exeter, Lindsay, and Fountain Springs; and mastodon (*Mammuth americanum*) found in White River (Jefferson, 1991a, 1991b). Fossil remains of salamander (*Hydromantes* sp.), lizard (*Gerrhonotus* sp. cf. *G. multicarinatus*, *Sceloporus* sp. cf. *S. occidentalis*), and

garter snake (*Thamnophis* sp.) have also been recovered from Kings Canyon in Tulare County (Jefferson, 1991a, 1991b). Based on the documented occurrence of vertebrate fossils in Pleistocene alluvial deposits in Tulare County, these deposits are assigned a high paleontological potential.

Summary and Recommendations

The high paleontological potential of Pleistocene older alluvium in Tulare County (SVP, 2010) suggests there is a related potential that earthwork activities for the proposed Project may result in impacts to paleontological resources. However, without knowing what earthwork activities are planned, it is not possible to determine whether such impacts will actually occur during development of the Project site. Typical earthwork activities associated with oil and gas well development include grading to create level pads and access roads, excavations to create sumps for well drilling fluids, trenching for installation of utilities and pipelines, and small-and large diameter drilling for the actual wells. In the event that earthwork activities on the Project site do impact previously undisturbed deposits of Pleistocene older alluvium, paleontological mitigation in the form of monitoring of earthwork is recommended. However, not all types of earthwork can be feasibly mitigated. For example, grading for access roads and well pads, excavation for sumps, trenching for utilities, and drilling with a helical auger greater than 18 inches in diameter can be mitigated. In contrast, drilling with a small diameter rotary drill bit, drilling with a bucket auger, hydroexcavation, and mechanical compaction cannot be feasibly mitigated. In the absence of specific information about planned earthwork activities, it would be prudent to take an adaptive approach and conduct paleontological monitoring only in the event that Project earthwork activities involve excavations that extend deeper than five feet below original ground surface in previously undisturbed deposits of Pleistocene older alluvium (e.g., excavations for sumps or underground utilities).

If you have any questions concerning these findings please feel free to contact me at 619-255-0321 or kmccomas@sdnhm.org.

Sincerely,



Katie McComas, M.S.
Paleontological Report Writer & GIS Specialist
San Diego Natural History Museum

Enc: *Figure 1: Project map*

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