APPENDIX "A"

AIR QUALITY AND GREENHOUSE GAS ANALYSIS

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Mitchell Air Quality Consulting

Air Quality and Greenhouse Gas Analysis Report
Deer Creek Mine Expansion Project
Tulare County, California

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
AB	Assembly Bill
AERMOD Model	American Meteorological Society and US Environmental Protection Agency Regulatory
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ASF	age sensitivity factor
AT	averaging time
BAU	Business as Usual
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CEQA	California Environmental Quality Act
CO	carbon monoxide
CO_2	carbon dioxide
CPF	cancer potency factor
DBR	daily breathing rate
District	San Joaquin Valley Air Pollution Control District
DPM	diesel particulate matter
ED	exposure duration
EF	exposure frequency
EMFAC	EMission FACtors Model
EPA	United States Environmental Protection Agency
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
GHG Rx	Greenhouse Gas Reduction Exchange
GHG	greenhouse gas
IPCC	United Nations Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
MAQC	Mitchell Air Quality Consulting
MMBtu	million British thermal units
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
$MTCO_2e$	metric tons of carbon dioxide equivalent
NO_X	nitrogen oxides
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppb	parts per billion

ppm	parts per million
ROG	reactive organic gases
RTP/SCS	Regional Transportation Plan/Sustainable Community Strategy
SB	Senate Bill
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO_X	sulfur oxides
TCAG	Tulare County Association of Governments
VOC	volatile organic compounds
ZEV	zero emission vehicle

SECTION 1: EXECUTIVE SUMMARY

1.1—Purpose and Methods of Analysis

The following air quality, health risk, and greenhouse gas (GHG) analysis was prepared to evaluate whether the estimated criteria air pollutant, toxic air contaminant, and GHG emissions generated from the Deer Creek Mine Expansion Project (project) would cause significant impacts to air resources in the project area. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows the Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) prepared by the San Joaquin Valley Air Pollution Control District (SJVAPCD or District) for quantification of emissions and evaluation of potential impacts to air resources (SJVAPCD 2015a). The Greenhouse Gas Analysis follows the SJVAPCD "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA" (adopted in December 2009) to determine significance (SJVAPCD 2009).

1.2—Project Description

The project is the expansion of the existing Deer Creek Mine. The project site is located in unincorporated Tulare County at 27671 Avenue 120, Porterville, California. The site is located south of Deer Creek approximately one-third mile east of Avenue 120 and Road 272. The project would add approximately 20 acres to the mining area. The project Assessor's Parcel Numbers are 305-190-022 and 305-190-021. Deer Creek Rock Company, Inc. currently operates a rock and gravel surface mining operation on 110 acres.

The project includes the following:

- A 20-acre expansion toward the east and southeast on land currently used for grazing.
- Increase annual production by 500,000 tons per year (from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year). The project has not reached its current maximum permitted limit. The current existing baseline amount for analysis is 800,000 tons per year.
- Increase truck hauling by 224 round-trips per day (from a maximum of 376 round-trips per day to a maximum of 600 round-trips per day), with a maximum of 60,000 truck trips per year from the existing 43,200 truck trips per year.
- A change in total rock production from 40,000,000 tons of rock to 75,000,000 tons of rock material during the estimated 50 years of operation.
- The project will increase the workforce by three employees (from 27 to 30 employees).
- The project will continue to use blasting to break up larger rocks that cannot be moved or broken up by mechanical means.

The project's regional vicinity location is shown in Figure 1; an aerial view of the local vicinity is provided in Figure 2; the project site plan is shown in Figure 3, and a detailed plan of the quarry site excavation area is provided in Figure 4.

1.3—Summary of Analysis Results

The following is a summary of the analysis results. As shown below, the project would result in less than significant impacts for all air quality and GHG impact criteria analyzed.

Impact AIR-1: The project would not conflict with or obstruct implementation of the applicable air quality plan. **Less than significant impact.**

Impact AIR-2: The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors). **Potentially significant impact before mitigation, less than significant impact with mitigation.**

Impact AIR-3: The project would not expose sensitive receptors to substantial pollutant concentrations. **Potentially significant impact before mitigation, less than significant impact with mitigation.**

Impact AIR-4: The project would not create objectionable odors affecting a substantial number of people. **Less than significant impact.**

Impact GHG-1: The project would not generate direct or indirect greenhouse gas emissions that would result in a significant impact on the environment. **Less than significant impact.**

Impact GHG-2: The project would not conflict with any applicable plan, policy or regulation of an agency adopted to reduce the emissions of greenhouse gases. **Less than significant impact**.

1.4—Standard Conditions and Mitigation Measures Applied to the Project

The following mitigation measures are required to reduce project ozone precursor emissions and diesel particulate matter emissions to less than significant levels.

MM AIR-2a The following air pollution control measure shall be implemented to reduce emissions from off-road equipment:

- Idling times shall be minimized either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485 of the California Code of Regulations). Clear signage shall be provided where clearly visible to equipment users.

MM AIR-2b Prior to increasing production beyond 395,000 tons per year of additional material, but less than 500,000 tons of material, the applicant shall ensure that the off-road

equipment fleet meets EPA Tier 4 Interim or Tier 4 NO_X emissions standards. If the increase in production to 500,000 tons per year is deferred until 2025, compliance only with the ARB In-Use Off-Road Diesel-Fueled Fleet regulation is required to increase throughput by 500,000 tons per year (1,300,000 tons per year).

MM AIR-2c Prior to increasing production by 700,000 tons per year to the 1,500,000 tons per year permit limit in the year 2025 or later, the applicant shall ensure that the off-road equipment fleet meets EPA Tier 4 Interim or Tier 4 NO_X emissions standards.

MM AIR-3a Prior to reaching the maximum throughput increase of 700,000 tons per year or the 1,500,000 tons permit limit, the operator shall pave at least 0.20 mile of unpaved access road starting from the site entrance on Deer Creek Road.

MM AIR-3b Unpaved haul roads shall be controlled with the application of water as needed to reduce fugitive dust to less than 20 percent opacity. Water shall be applied three times per day to achieve a 61 percent control and the opacity limit.

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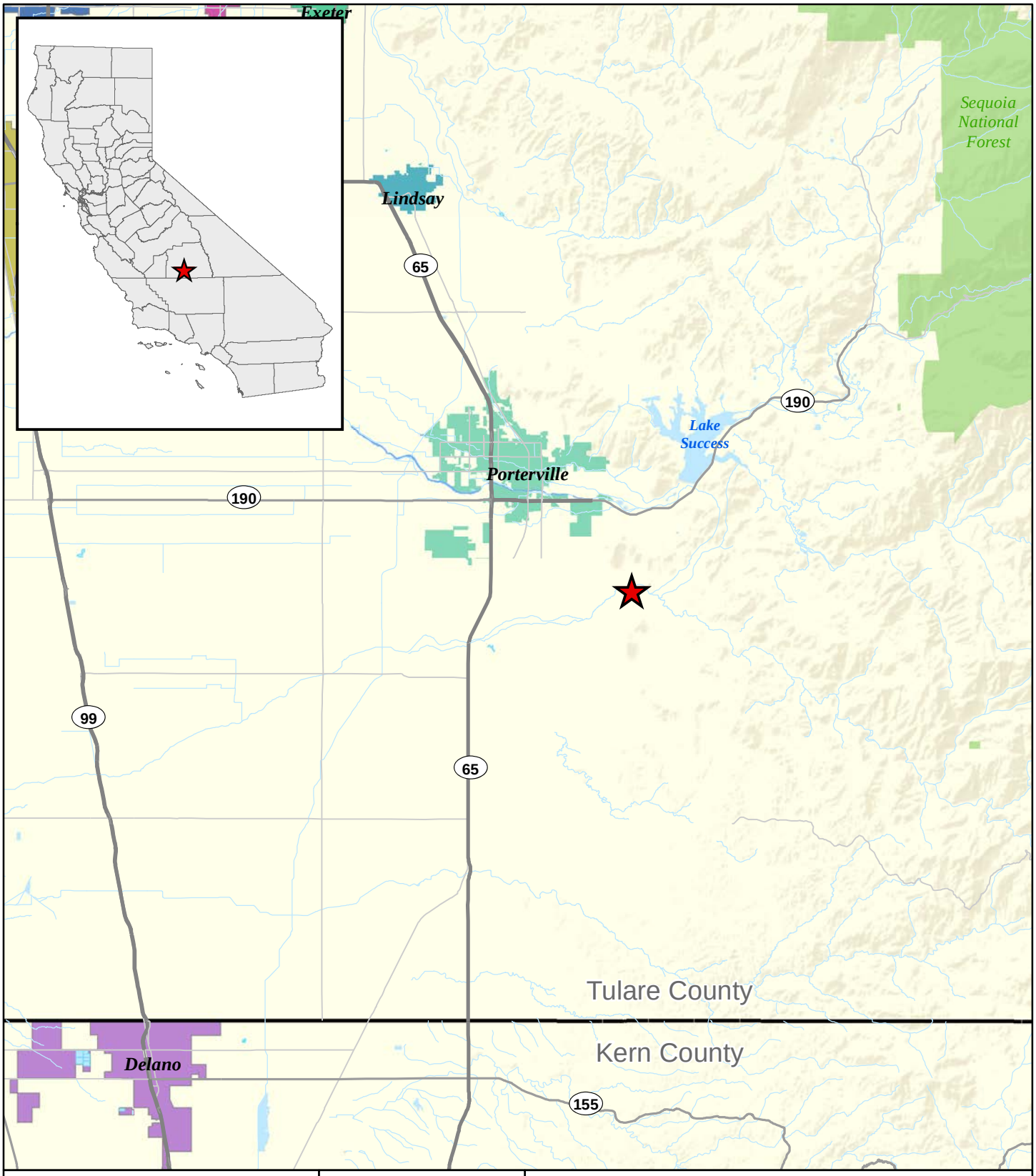

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Project Location

County Boundary

NORTH

0 2 4

Miles

Sources: Fresno County GIS; Tulare County GIS; Open StreetMap; CalAtlas. USFS. Map date: May 22, 2019.

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DEER CREEK MINE EXPANSION PROJECT

Figure 1. Regional Location Map

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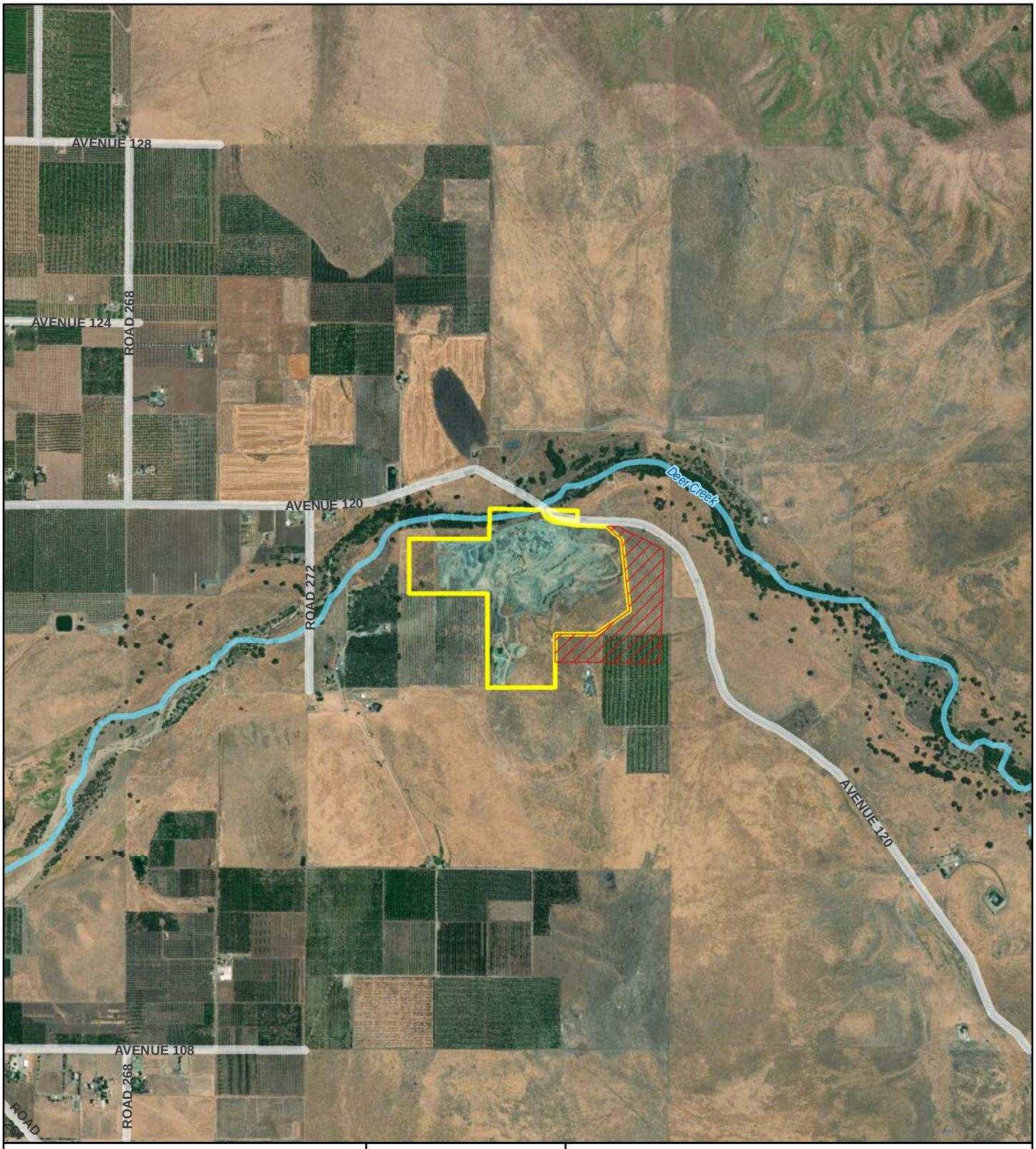

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Existing Approved Area

Proposed Expansion Area

Source: Tulare County; ArcGIS Online World Imagery Map Service. Map date: May 22, 2019.

NORTH

0 1,000 2,000

Feet

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DEER CREEK MINE EXPANSION PROJECT

Figure 2. Vicinity Map

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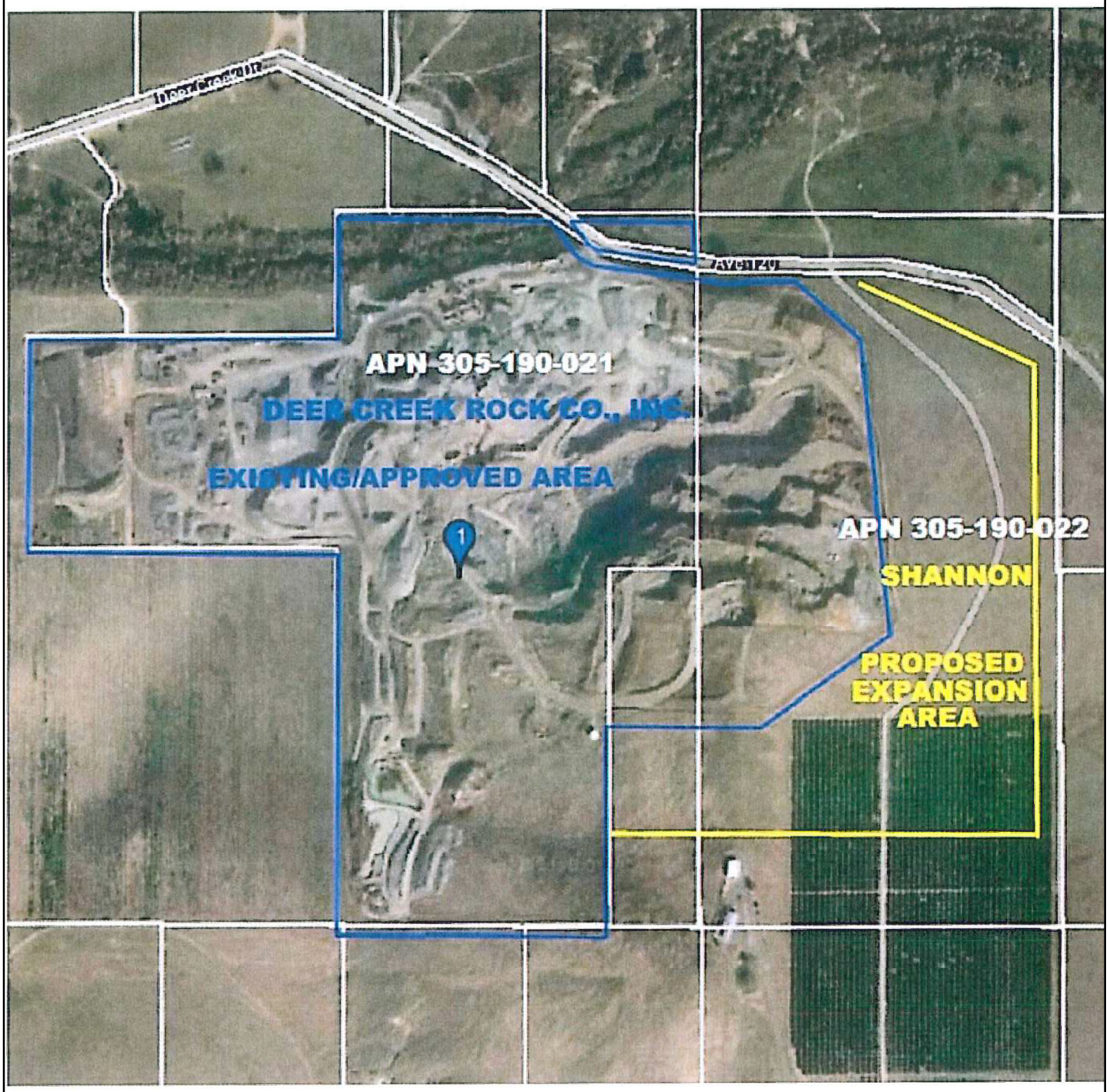

NORTH

0 250 500

Feet

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Figure 3. Site Plan

Source: PMR 19-001 Notice of Preparation - County of Tulare, April 10, 2019. Map date: May 22, 2019.

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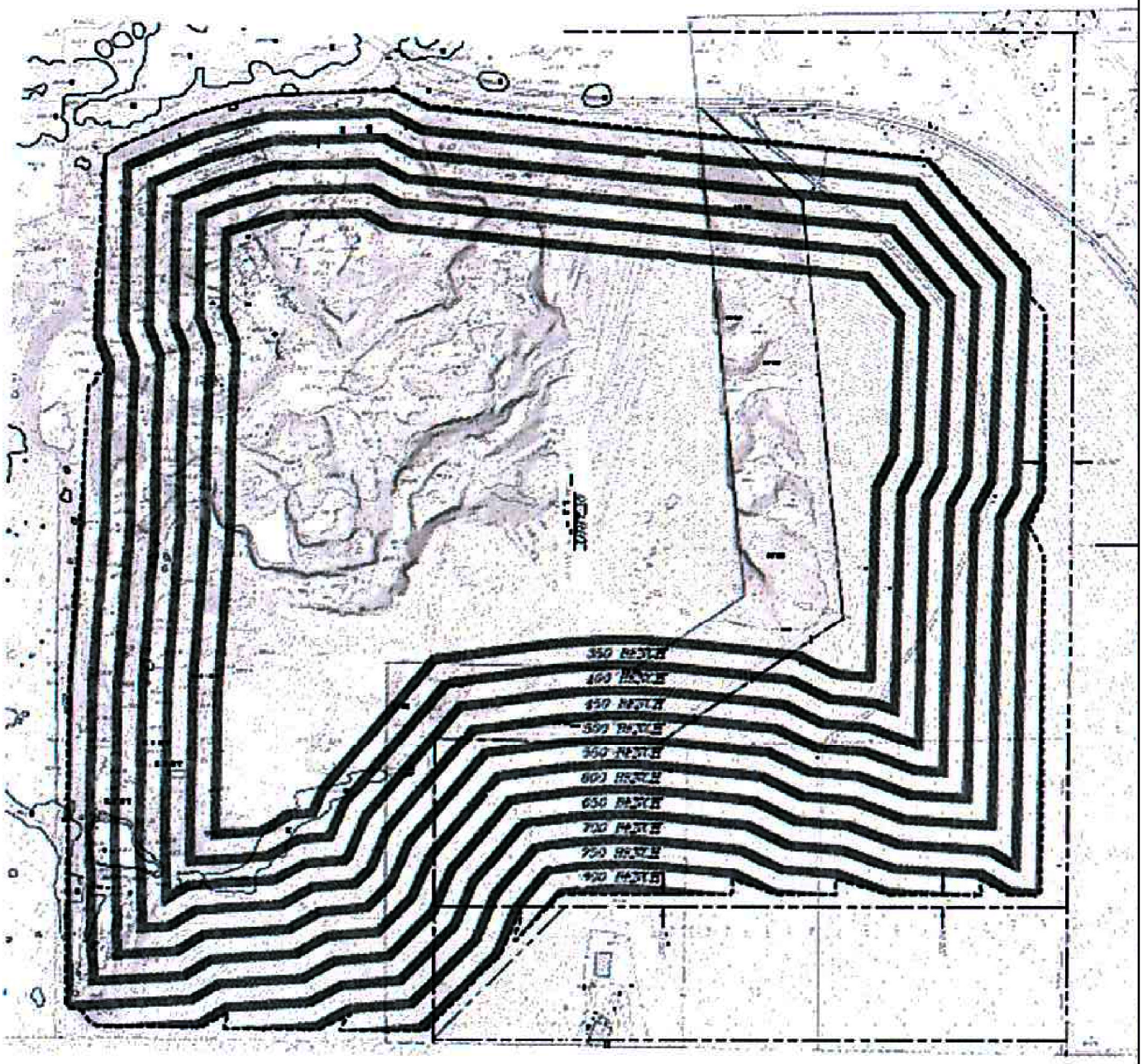

NORTH

0 200 400

Feet

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DEER CREEK MINE EXPANSION PROJECT

Figure 4. Project Site

Source: PMR 19-001 Notice of Preparation - County of Tulare, April 10, 2019. Map date: May 22, 2019.

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SECTION 2: AIR QUALITY SETTING

2.1—Environmental Setting

Air quality impacts are both local and regional. Regional and local air quality is impacted by topography, dominant airflows, atmospheric inversions, location, and season. The project is located in the San Joaquin Valley Air Basin, which experiences some of the challenging environmental conditions for air quality in the nation. The following section describes these conditions as they pertain to the Air Basin. The information in this section is primarily from the District's GAMAQI (SJVAPCD 2015a).

2.1.1 - San Joaquin Valley Air Basin

Topography

The topography of a region is important for air quality because mountains can block airflow that would help disperse pollutants, and can channel air from upwind areas that transports pollutants to downwind areas. The SJVAPCD covers the entirety of the Air Basin. The Air Basin is generally shaped like a bowl. It is open in the north and is surrounded by mountain ranges on all other sides. The Sierra Nevada mountains are along the eastern boundary (8,000 to 14,000 feet in elevation), the Coast Ranges are along the western boundary (3,000 feet in elevation), and the Tehachapi Mountains are along the southern boundary (6,000 to 8,000 feet in elevation).

Climate

The climate is important for air quality because of differences in the atmosphere's ability to trap pollutants close to the ground, which creates adverse air quality; inversely, the atmosphere's ability to rapidly disperse pollutants over a wide area prevents high concentrations from accumulating under different climatic conditions. The Air Basin has an "inland Mediterranean" climate and is characterized by long, hot, dry summers and short, foggy winters. Sunlight can be a catalyst in the formation of some air pollutants (such as ozone); the Air Basin averages over 260 sunny days per year.

Inversion layers are significant in determining pollutant concentrations. Concentration levels can be related to the amount of mixing space below the inversion. Temperature inversions that occur on the summer days are usually encountered 2,000 to 2,500 feet above the valley floor. In winter months, overnight inversions occur 500 to 1,500 feet above the valley floor.

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the Air Basin form natural horizontal barriers to the dispersion of air contaminants. The wind generally flows south-southeast through the valley, through the Tehachapi Pass and into the Mojave Desert Air Basin portion of Kern County. As the wind moves through the Air Basin, it mixes with the air pollution generated locally, generally transporting air pollutants from the north to the south in the summer and in a reverse flow in the winter.

The winds and unstable air conditions experienced during the passage of winter storms result in periods of low pollutant concentrations and excellent visibility. Between winter storms, high pressure and light winds allow cold moist air to pool on the San Joaquin Valley floor. This creates

strong, low-level temperature inversions and very stable air conditions, which can lead to Tule fog. Wintertime conditions favorable to fog formation are also conditions favorable to high concentrations of $PM_{2.5}$ and PM_{10}.

2.2—Regulatory Setting

Air pollutants are regulated to protect human health and for secondary effects such as visibility and building soiling. The Clean Air Act of 1970 tasks the United States Environmental Protection Agency (EPA) with setting air quality standards. The State of California also sets air quality standards, which are in some cases more stringent than federal standards, in addition to addressing additional pollutants. The following section describes these federal and state standards and the health effects of the regulated pollutants.

2.2.1 - Clean Air Act

Congress established much of the basic structure of the Clean Air Act (CAA) in 1970, and made major revisions in 1977 and 1990. Six common air pollutants (also known as criteria pollutants) are addressed in the CAA: particulate matter, ground-level ozone, carbon monoxide (CO), sulfur oxides (SO_X), nitrogen oxides (NO_X), and lead. The EPA labels these pollutants as criteria air pollutants because they are regulated by developing human health-based and/or environmentally based criteria (science-based guidelines), which sets permissible levels. The set of limits based on human health are called primary standards. Another set of limits intended to prevent environmental and property damage are called secondary standards (EPA 2014). The federal standards are called National Ambient Air Quality Standards (NAAQS). The air quality standards provide benchmarks for determining whether air quality is healthy at specific locations and whether development activities will cause or contribute to a violation of the standards. The criteria pollutants are:

- Ozone
- Nitrogen dioxide (NO_2)
- Lead
- Particulate matter (PM_{10} and $PM_{2.5}$)
- Carbon monoxide (CO)
- Sulfur dioxide

The federal standards were set to protect public health, including that of sensitive individuals; thus, the EPA is tasked with updating the standards as more medical research is available regarding the health effects of the criteria pollutants. Primary federal standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health (ARB 2016).

2.2.2 - California Clean Air Act

The California Legislature enacted the California Clean Air Act (CCAA) in 1988 to address air quality issues of concern not adequately addressed by the federal CAA at the time. California's air quality problems were and continue to be some of the most severe in the nation, and required additional actions beyond the federal mandates. The California Air Resources Board (ARB) administers California Ambient Air Quality Standards (CAAQS) for the 10 air pollutants designated in the CCAA. The 10 state air pollutants are the six federal standards listed above as well visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The EPA authorized California to adopt its own regulations for motor vehicles and other sources that are more stringent than similar federal regulations implementing the CAA. Generally, the planning requirements of the CCAA are less

stringent than the federal CAA; therefore, consistency with the CAA will also demonstrate consistency with the CCAA.

2.2.3 - Toxic Air Contaminants

A toxic air contaminant (TAC) is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. There are no ambient air quality standards for TAC emissions. TACs are regulated in terms of health risks to individuals and populations exposed to the pollutants. The 1990 Clean Air Act Amendments significantly expanded the EPA's authority to regulate hazardous air pollutants (HAP). Section 112 of the Clean Air Act lists 187 hazardous air pollutants to be regulated by source category. Authority to regulate these pollutants was delegated to individual states. ARB and local air districts regulate TACs and HAPs in California.

2.2.4 - Air Pollutant Description and Health Effects

The federal and state ambient air quality standards, relevant effects, properties, and sources of the pollutants are summarized in Table 1.

Table 1: Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Ozone	1 Hour	0.09 ppm	—	Irritate respiratory system; reduce lung function; breathing pattern changes; reduction of breathing capacity; inflame and damage cells that line the lungs; make lungs more susceptible to infection; aggravate asthma; aggravate other chronic lung diseases; cause permanent lung damage; some immunological changes; increased mortality risk; vegetation and property damage.	Ozone is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between volatile organic compounds (VOC), NO_X, and sunlight. Ozone is a regional pollutant that is generated over a large area and is transported and spread by the wind.	Ozone is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NO_X) are mobile sources (on-road and off-road vehicle exhaust).
	8 Hour	0.070 ppm	0.070 ppm[f]			
Carbon monoxide (CO)	1 Hour	20 ppm	35 ppm	Ranges depending on exposure: slight headaches; nausea; aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease; decreased exercise tolerance in persons with peripheral vascular disease and lung disease; impairment of central nervous system functions; possible increased risk to fetuses; death.	CO is a colorless, odorless, toxic gas. CO is somewhat soluble in water; therefore, rainfall and fog can suppress CO conditions. CO enters the body through the lungs, dissolves in the blood, replaces oxygen as an attachment to hemoglobin, and reduces available oxygen in the blood.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). Sources include motor vehicle exhaust, industrial processes (metals processing and chemical manufacturing), residential wood burning, and natural sources.
	8 Hour	9.0 ppm	9 ppm			
Nitrogen dioxide[b] (NO_2)	1 Hour	0.18 ppm	0.100 ppm	Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; contribution to atmospheric discoloration; increased visits to hospital for respiratory illnesses.	During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides— NO_X (NO, NO_2, NO_3, N_2O, N_2O_3, N_2O_4, and N_2O_5). NO_X is a precursor to ozone, PM_{10}, and $PM_{2.5}$ formation. NO_X can react with compounds to form nitric acid and related small particles and result in PM-related health effects.	NO_X is produced in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. Nitrogen dioxide (NO_2) forms quickly from NO_X emissions. NO_2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.
	Annual	0.030 ppm	0.053 ppm			

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfur dioxide[c] (SO_2)	1 Hour	0.25 ppm	0.075 ppm	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient sulfur dioxide levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.	Sulfur dioxide is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides (SO_X) include sulfur dioxide and sulfur trioxide. Sulfuric acid is formed from sulfur dioxide, which can lead to acid deposition and can harm natural resources and materials. Although sulfur dioxide concentrations have been reduced to levels well below state and federal standards, further reductions are desirable because sulfur dioxide is a precursor to sulfate and PM_{10}.	Human caused sources include fossil-fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of sulfur dioxide. The gas can also be produced in the air by dimethylsulfide and hydrogen sulfide. Sulfur dioxide is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The sulfur dioxide levels in the State are well below the maximum standards.
	3 Hour	—	0.5 ppm			
	24 Hour	0.04 ppm	0.14 (for certain areas)			
	Annual	—	0.030 ppm (for certain areas)			
Particulate matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	• Short-term exposure (hours/days): irritation of the eyes, nose, throat; coughing; phlegm; chest tightness; shortness of breath; aggravates existing lung disease, causing asthma attacks and acute bronchitis; those with heart disease can suffer heart attacks and arrhythmias. • Long-term exposure: reduced lung function; chronic bronchitis; changes in lung morphology; death.	Suspended particulate matter is a mixture of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} refers to particulate matter that is between 2.5 and 10 microns in diameter (1 micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter, about one-thirtieth the size of the average human hair.	Stationary sources include fuel or wood combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal; and recycling. Mobile or transportation-related sources are from vehicle exhaust and road dust. Secondary particles form from reactions in the atmosphere.
	Mean	20 µg/m^3	—			
Particulate matter ($PM_{2.5}$)	24 Hour	—	35 µg/m^3			
	Annual	12 µg/m^3	12.0 µg/m^3			
Visibility-reducing particles	8 Hour	See note below[d]				

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfates	24 Hour	25 µg/m^3	—	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) degradation of visibility; (f) Property damage.	The sulfate ion is a polyatomic anion with the empirical formula SO_4^{2-}. Sulfates occur in combination with metal and/or hydrogen ions. Many sulfates are soluble in water.	Sulfates are particulates formed through the photochemical oxidation of sulfur dioxide. In California, the main source of sulfur compounds is combustion of gasoline and diesel fuel.
Lead[e]	30-day	1.5 µg/m^3	—	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction, behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQ.	Lead is a solid heavy metal that can exist in air pollution as an aerosol particle component. Leaded gasoline was used in motor vehicles until around 1970. Lead concentrations have not exceeded state or federal standards at any monitoring station since 1982.	Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering.
	Quarter	—	1.5 µg/m^3			
	Rolling 3-month average	—	0.15 µg/m^3			
Vinyl chloride[e]	24 Hour	0.01 ppm	—	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.	Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1990, ARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.	Most vinyl chloride is used to make polyvinyl chloride plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. It can be formed when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Hydrogen sulfide	1 Hour	0.03 ppm	—	High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause headache, nausea, vomiting, and cough. Long exposure can cause pulmonary edema.	Hydrogen sulfide (H_2S) is a flammable, colorless, poisonous gas that smells like rotten eggs.	Manure, storage tanks, ponds, anaerobic lagoons, and land application sites are the primary sources of hydrogen sulfide. Anthropogenic sources include the combustion of sulfur-containing fuels (oil and coal).
Volatile organic compounds (VOC)		There are no state or federal standards for VOCs because they are not classified as criteria pollutants.		Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, the kidneys, and the central nervous system. Many VOCs have been classified as toxic air contaminants.	Reactive organic gases (ROG), or VOCs, are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROG and VOCs, the two terms are often used interchangeably.	Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} and lower visibility.
Diesel particulate matter (DPM)		There are no ambient air quality standards for DPM.		Some short-term (acute) effects of DPM exposure include eye, nose, throat, and lung irritation, coughs, headaches, light-headedness, and nausea. Studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Human studies on the carcinogenicity of DPM demonstrate an increased risk	DPM is a source of $PM_{2.5}$—diesel particles are typically 2.5 microns and smaller. Diesel exhaust is a complex mixture of thousands of particles and gases that is produced when an engine burns diesel fuel. Organic compounds account for 80 percent of the total particulate matter mass, which consists of compounds such as hydrocarbons and their derivatives, and polycyclic aromatic hydrocarbons and their derivatives. Fifteen polycyclic	Diesel exhaust is a major source of ambient particulate matter pollution in urban environments. Typically, the main source of DPM is from combustion of diesel fuel in diesel-powered engines. Such engines are in on-road vehicles such as diesel trucks, off-road construction vehicles, diesel electrical generators, and various pieces of stationary construction equipment.

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
				of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure.	aromatic hydrocarbons are confirmed carcinogens, a number of which are found in diesel exhaust.	

Notes:
ppm = parts per million (concentration) µg/m^3 = micrograms per cubic meter Annual = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar quarter

[a] Federal standard refers to the primary national ambient air quality standard, or the levels of air quality necessary, with an adequate margin of safety to protect the public health. All standards listed are primary standards except for 3 hour SO_2, which is a secondary standard. A secondary standard is the level of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[b] To attain the 1-hour NO_2 national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb) (0.100 ppm).

[c] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[d] Visibility-reducing particles: In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

[e] The ARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[f] The EPA Administrator approved a revised 8-hour ozone standard of 0.07 ppb on October 1, 2015. The new standard will go into effect 60 days after publication of the Final Rule in the Federal Register. The Final Rule was published in the Federal Register on October 26, 2015 and became effective on December 28, 2015.

Source of effects, properties, and sources: South Coast Air Quality Management District 2007; California Environmental Protection Agency 2002; California Air Resources Board 2009a; U.S. Environmental Protection Agency 2003, 2009a, 2009b,2010, 2011, 2012a and 2012b; National Toxicology Program 2011 and 2016.
Source of standards: California Air Resources Board 2013a.

Several pollutants listed in Table 1 are not addressed in this analysis. Analysis of lead is not included in this report because no new sources of lead emissions are anticipated with the project. Visibility-reducing particles are not explicitly addressed in this analysis because particulate matter is addressed as PM_{10} and $PM_{2.5}$. No components of the project would result in vinyl chloride or hydrogen sulfide emissions in any substantial quantity.

Toxic Air Contaminants Health Effects

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. The California Almanac of Emissions and Air Quality presents the relevant concentration and cancer risk data for the 10 TACs that pose the most substantial health risk in California based on available data. The 10 TACs are acetaldehyde, benzene, 1.3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter (DPM).

Some studies indicate that DPM poses the greatest health risk among the TACs listed above. A 10-year research program (ARB 1998) demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. In addition to increased risk of lung cancer, exposure to diesel exhaust can have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause a cough, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of fine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems.

DPM differs from other TACs in that it is not a single substance, but a complex mixture of hundreds of substances. Although DPM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies, depending on: engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, however, no ambient monitoring data are available for DPM because no routine measurement method currently exists. The ARB has made preliminary concentration estimates based on a DPM exposure method. This method uses the ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of DPM.

Health risks attributable to the top 10 TACs listed above are available from the ARB as part of its California Almanac of Emissions and Air Quality—2009 Edition (ARB 2009b). As shown therein for data collected at the First Street air monitoring station in Fresno, cancer risks attributable to all of the listed TACs above with the exception of DPM have declined about 70 percent from the mid-1990s to 2007. Risks associated with DPM emissions are provided only for the year 2000 and have not been updated in the Almanac. Although more recent editions of the Almanac do not provide estimated risk, they do provide emission inventories for DPM for later years. The 2013 Almanac provides emission inventory trends for DPM from 2000 through 2035. The same Almanac reports that DPM emissions were reduced in the SJVAB from 16 tons per day in 2000 to 11 tons per day in 2010, a 31 percent decrease. DPM emissions in the San Joaquin Valley are projected to decrease to

six tons per day by 2015, a 62 percent reduction from year 2000 levels. ARB predicts a reduction to three tons per day by 2035, which would be an 81 percent reduction from year 2000 levels. Continued implementation of the ARB's Diesel Risk Reduction Plan is expected to provide continued reductions in DPM through 2020 and beyond through regulations on this source (ARB 2013b).

In addition to DPM, the operation of the project would also release amounts of fugitive dust that contain several TACs through the various stages of the aggregate processing. These TACs include aluminum, arsenic, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, selenium, zinc, and crystalline silica.

Aluminum

Exposure to aluminum can occur through inhalation, ingestion, and eye or skin contact. Symptoms of exposure may include the following:

Acute exposure: Acute exposure to aluminum dust has resulted in eye irritation.

Chronic exposure: The signs and symptoms of chronic exposure to aluminum metal dust include shortness of breath, weakness, and cough (OSHA).

Arsenic

Arsenic occurs naturally in the environment as an element of the earth's crust. Arsenic is combined with other elements such as oxygen, chlorine, and sulfur to form inorganic arsenic compounds. Exposure to high levels of arsenic can cause death. Exposure to arsenic at low levels for extended periods of time can cause a discoloration of the skin and the appearance of small corns or warts (OSHA).

Beryllium

Beryllium is a metal that is found in nature, especially in beryl and bertrandite rock. It is extremely lightweight and hard, is a good conductor of electricity and heat, and is nonmagnetic. Exposure happens when a person breathes in beryllium mists, dusts, or fumes. Beryllium can then travel to the lungs where it can cause damage. Beryllium-related granulomas (non-cancerous tumors or growths) can also develop in other body tissues but these do not usually result in a loss of function. Beryllium disease is caused primarily by breathing air with beryllium mists, dusts, and fumes. Both acute (abrupt, short-term) and chronic (long-term) health problems can occur.

The acute disease starts soon after exposure and resembles pneumonia or bronchitis. It requires relatively high levels of exposure to occur and is now quite rare because protective measures to reduce exposure are usually in place.

The chronic form—chronic beryllium disease—takes longer to develop than the acute form. Onset may occur from several months to decades after exposure. This disease can occur after much lower levels of exposure than the acute form. In chronic beryllium disease, inflammation and scarring of the lungs make it more difficult for the lungs to get oxygen to the bloodstream and body. A special type of scarring called granuloma is very typical of this disease. These noncancerous growths look like scars or tumors present in another disease called sarcoidosis. Most people exposed to beryllium will *not* develop chronic beryllium disease.

Chronic beryllium disease can be either mild or severe. For some, it can be a relatively minor condition, while for others it can be a very serious, even fatal, disease. The amount of length of exposure necessary to cause a specific individual to develop the disease is not known. As with many workplace hazards, it is believed that higher exposures cause more people to become sensitized. In a few people, exposure to even very small amounts of beryllium can pose a problem. In these people, their bodies react and begin the disease process even when exposed to only small amounts of the metal. The reason for this is not well understood.

Beryllium is identified by the International Agency for Research on Cancer and the National Toxicology Program as a human carcinogen. Persons exposures to beryllium are at increased risk of developing lung cancer (OSHA 2017).

Cadmium

Cadmium (Cd) is a soft, malleable, bluish-white metal found in zinc ores and, to a much lesser extent, in the cadmium mineral greenockite. Cadmium and its compounds are highly toxic and exposure to this metal is known to cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems (EPA 2000a).

Chromium

Chromium occurs in the environment primarily in two valence states, trivalent chromium (Cr III) and hexavalent chromium (Cr VI). Exposure may occur from natural or industrial sources of chromium. Chromium (III) is much less toxic than chromium (VI). The respiratory tract is also the major target organ for chromium (III) toxicity, similar to chromium (VI). Chromium (III) is an essential element in humans. The body can detoxify some amount of chromium (VI) to chromium (III).

The respiratory tract is the major target organ for chromium (VI) toxicity, for acute (short-term) and chronic (long-term) inhalation exposures. Shortness of breath, coughing, and wheezing were reported from a case of acute exposure to chromium (VI), while perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, and other respiratory effects have been noted from chronic exposure. Human studies have clearly established that inhaled chromium (VI) is a human carcinogen, resulting in an increased risk of lung cancer. Animal studies have shown chromium (VI) to cause lung tumors via inhalation exposure (EPA 2000b).

Cobalt

Cobalt (Co) is a metal that can be stable (non-radioactive, as found in nature), or unstable (radioactive, man-made). The most common radioactive isotope of cobalt is cobalt-60. All ionizing radiation, including that of cobalt-60, is known to cause cancer. Therefore, exposures to gamma radiation from cobalt-60 result in an increased risk of cancer. Because it emits such strong gamma rays, external exposure to cobalt-60 is considered a significant threat. The magnitude of the health risk depends on the quantity of cobalt-60 involved and on exposure conditions: length of exposure, distance from the source (for external exposure), and whether the cobalt-60 was ingested or inhaled (EPA 2000b).

Copper

Copper is an essential nutrient, but at high doses it has been shown to cause stomach and intestinal distress, liver and kidney damage, and anemia. Persons with Wilson's disease may be at a higher risk

of health effects due to copper than the general public. There is inadequate evidence to state whether copper has the potential to cause cancer from a lifetime exposure in drinking water (EPA).

Manganese

Manganese is a naturally occurring metal that, in pure form, is silver-colored with no taste or smell. Manganese is normally encountered in the environment as a compound with oxygen, sulfur, or chlorine. Manganese is an essential nutrient, required in trace amounts for human health. Intake is normally sufficient with a balanced diet. The primary targets of manganese toxicity are the brain and central nervous system. Manganese has been shown to be deposited in certain regions of the brain, and exposure to high concentrations in occupational studies was associated with permanent damage, with symptoms of impaired neurological and neuromuscular control, mental and emotional disturbances, muscle stiffness, lack of coordination, tremors, difficulties with breathing or swallowing, and other neuromuscular problems. Exposure to very high doses of manganese in experimental animal studies has resulted in impaired male fertility, and birth defects in offspring including cleft palate, impaired bone development, and other effects (EPA 2016).

Nickel

Nickel occurs naturally in the environment at low levels. Nickel is an essential element in some animal species, and it has been suggested it may be essential for human nutrition. Nickel dermatitis—consisting of itching of the fingers, hands, and forearms—is the most common effect in humans from chronic (long-term) skin contact with nickel. Respiratory effects have also been reported in humans from inhalation exposure to nickel. Human and animal studies have reported an increased risk of lung and nasal cancers from exposure to nickel refinery dusts and nickel subsulfide. Animal studies of soluble nickel compounds (e.g., nickel carbonyl) have reported lung tumors. The EPA has classified nickel refinery dust and nickel subsulfide as Group A, human carcinogens, and nickel carbonyl as a Group B2, probable human carcinogen (EPA 2000c).

Selenium

Selenium is a naturally occurring substance that is toxic at high concentrations but is also a nutritionally essential element. Hydrogen selenide is the most acutely toxic selenium compound. Acute (short-term) exposure to elemental selenium, hydrogen selenide, and selenium dioxide by inhalation results primarily in respiratory effects, such as irritation of the mucous membranes, pulmonary edema, severe bronchitis, and bronchial pneumonia. Epidemiological studies of humans chronically (long-term) exposed to high levels of selenium in food and water have reported discoloration of the skin, pathological deformation and loss of nails, loss of hair, excessive tooth decay and discoloration, lack of mental alertness, and listlessness. Epidemiological studies have reported an inverse association between selenium levels in the blood and cancer occurrence and animal studies have reported that selenium supplementation, as sodium selenate, sodium selenite, and organic forms of selenium, results in a reduced incidence of several tumor types. The only selenium compound that has been shown to be carcinogenic in animals is selenium sulfide, which resulted in an increase in liver tumors from oral exposure. The EPA has classified elemental selenium as a Group D, not classifiable as to human carcinogenicity, and selenium sulfide as a Group B2, probable human carcinogen (EPA 2000d).

Zinc

Although zinc is an essential requirement for good health, excess zinc can be harmful. Excessive absorption of zinc suppresses copper and iron absorption. The free zinc ion in solution is highly toxic to plants, invertebrates, and even vertebrate fish (Wikipedia 2019).

Crystalline Silica

The following excerpt is from the United States Occupational Safety & Health Administration (OSHA 2002).

> Crystalline silica is a basic component of soil, sand, granite, and many other minerals. Quartz is the most common form of crystalline silica. Cristobalite and tridymite are two other forms of crystalline silica. All three forms may become respirable size particles when workers chip, cut, drill, or grind objects that contain crystalline silica.
>
> Silica exposure remains a serious threat to nearly 2 million U.S. workers, including more than 100,000 workers in high risk jobs such as abrasive blasting, foundry work, stonecutting, rock drilling, quarry work and tunneling. The seriousness of the health hazards associated with silica exposure is demonstrated by the fatalities and disabling illnesses that continue to occur in sandblasters and rock drillers. Crystalline silica has been classified as a human lung carcinogen. Additionally, breathing crystalline silica dust can cause silicosis, which in severe cases can be disabling, or even fatal. The respirable silica dust enters the lungs and causes the formation of scar tissue, thus reducing the lungs' ability to take in oxygen. There is no cure for silicosis. Since silicosis affects lung function, it makes one more susceptible to lung infections like tuberculosis. In addition, smoking causes lung damage and adds to the damage caused by breathing silica dust.
>
> Silicosis is classified into three types: chronic /classic, accelerated, and acute. Chronic/classic silicosis, the most common, occurs after 15–20 years of moderate to low exposures to respirable crystalline silica. Symptoms associated with chronic silicosis may or may not be obvious; therefore, workers need to have a chest x-ray to determine if there is lung damage. As the disease progresses, the worker may experience shortness of breath upon exercising and have clinical signs of poor oxygen/carbon dioxide exchange. In the later stages, the worker may experience fatigue, extreme shortness of breath, chest pain, or respiratory failure.
>
> Accelerated silicosis can occur after 5–10 years of high exposures to respirable crystalline silica. Symptoms include severe shortness of breath, weakness, and weight loss. The onset of symptoms takes longer than in acute silicosis.
>
> Acute silicosis occurs after a few months or as long as 2 years following exposures to extremely high concentrations of respirable crystalline silica. Symptoms of acute silicosis include severe disabling shortness of breath, weakness, and weight loss, which often leads to death.

OSHA has an established Permissible Exposure Limit, or PEL, which is the maximum amount of crystalline silica to which workers may be exposed during an 8-hour work shift (29 CFR 1926.55, 1910.1000). OSHA also requires hazard communication training for workers exposed to crystalline silica, and requires a respirator protection program until engineering controls are implemented. Additionally, OSHA has a National Emphasis Program for Crystalline Silica exposure to identify, reduce, and eliminate health hazards associated with occupational exposures.

Asbestos

Asbestos is the name given to a number of naturally occurring fibrous silicate minerals that have been mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the United States. Exposure to asbestos is a health threat; exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest, and abdominal cavity), and asbestosis (a non-cancerous lung disease that causes scarring of the lungs). Exposure to asbestos can occur during demolition or remodeling of buildings that were constructed prior to the 1977 ban on asbestos for use in buildings. Exposure to naturally occurring asbestos can occur during soil-disturbing activities in areas with deposits present.

2.3—Existing Air Quality Conditions

The local air quality can be evaluated by reviewing relevant air pollution concentrations near the project area. Table 2 summarizes 2015 through 2017 published monitoring data, which is the most recent three-year period available. The table displays data from the Porterville-Newcomb Street monitoring station (located approximately 5.8 miles west of the project site), which is the closest monitoring station to the project site and the Visalia-Church Street monitoring station located approximately 30 miles northwest of the project site for other pollutants not monitored at the Porterville site. The data shows that during the past few years, the project area has exceeded the standards for ozone (state and national), PM_{10} (state), and $PM_{2.5}$ (national). The data in the table reflects the concentration of the pollutants in the air, measured using air monitoring equipment. This differs from emissions, which are calculations of a pollutant being emitted over a certain period. No recent monitoring data for Tulare County or the San Joaquin Valley Air Basin was available for CO or SO_2. Generally, no monitoring is conducted for pollutants that are no longer likely to exceed ambient air quality standards.

Table 2: Air Quality Monitoring Summary

Air Pollutant	Averaging Time	Item	2015	2016	2017
Ozone[1]	1 Hour	Max 1 Hour (ppm)	**0.110**	**0.106**	**0.100**
		Days > State Standard (0.09 ppm)	4	9	4
Ozone[1]	8 Hour	Max 8 Hour (ppm)	**0.091**	**0.092**	**0.090**
		Days > State Standard (0.07 ppm)	42	81	34
		Days > National Standard (0.070 ppm)	41	80	34

Table 2 (cont.): Air Quality Monitoring Summary

Air Pollutant	Averaging Time	Item	2015	2016	2017
Carbon monoxide (CO)	8 Hour	Max 8 Hour (ppm)	ND	ND	ND
		Days > State Standard (9.0 ppm)	ND	ND	ND
		Days > National Standard (9 ppm)	ND	ND	ND
Nitrogen dioxide (NO_2)[2]	Annual	Annual Average (ppm)	0.009	ID	0.010
	1 Hour	Max 1 Hour (ppm)	0.0623	0.0575	0.0581
		Days > State Standard (0.18 ppm)	0	0	0
		1-Hour 98th Percentile	0.046	0.046	0.056
		Exceedance of the National Standard (0.10 ppm)	No	No	No
Sulfur dioxide (SO_2)	Annual	Annual Average (ppm)	ND	ND	ND
	24 Hour	Max 24 Hour (ppm)	ND	ND	ND
		Days > State Standard (0.04 ppm)	ND	ND	ND
Inhalable coarse particles (PM_{10})[2]	Annual	Annual Average (µg/m^3)	28.9	43.3	47.4
	24 hour	24 Hour (µg/m^3)	**67**	**95**	**144.8**
		Days > State Standard (50 µg/m^3)	50.3	61.3	135.9
		Days > National Standard (150 µg/m^3)	0	0	0
Fine particulate matter ($PM_{2.5}$)[2]	Annual	Annual Average (µg/m^3)	**13.0**	11.6	**13.2**
	24 Hour	24 Hour (µg/m^3)	**86.3**	**48.0**	**86.1**
		Days > National Standard (35 µg/m^3)	17.9	21.3	26.7

Notes:
> = exceed ppm = parts per million µg/m^3 = micrograms per cubic meter
ID = insufficient data ND = no data max = maximum
Bold = exceedance
State Standard = California Ambient Air Quality Standard
National Standard = National Ambient Air Quality Standard
[1] Porterville-Newcomb Street
[2] Visalia-North Church Street
Source: California Air Resources Board 2017a.

The health impacts of the various air pollutants of concern can be presented in a number of ways. The clearest of these is comparable with the state and federal ozone standards. If concentrations are below the standard, it is safe to say that no health impact would occur to anyone. When concentrations exceed the standard, impacts will vary based on the amount by which the standard is exceeded. The EPA developed the Air Quality Index (AQI) as an easy-to-understand measure of health impacts compared with concentrations in the air. Table 3 provides a description of the health impacts of ozone at different concentrations.

Table 3: Air Quality Index and Health Effects from Ozone

Air Quality Index/ 8-hour Ozone Concentration	Health Effects Description
AQI—51–100—Moderate	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 55–70 ppb	**Health Effects Statements**: Unusually sensitive individuals may experience respiratory symptoms.
	Cautionary Statements: Unusually sensitive people should consider limiting prolonged outdoor exertion.
AQI—101–150—Unhealthy for Sensitive Groups	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 71–85 ppb	**Health Effects Statements**: Increasing likelihood of respiratory symptoms and breathing discomfort in active children and adults and people with respiratory disease, such as asthma.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
AQI—151–200—Unhealthy	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 86–105 ppb	**Health Effects Statements**: Greater likelihood of respiratory symptoms and breathing difficulty in active children and adults and people with respiratory disease, such as asthma; possible respiratory effects in general population.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
AQI—201–300—Very Unhealthy	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 106–200 ppb	**Health Effects Statements**: Increasingly severe symptoms and impaired breathing likely in active children and adults and people with respiratory disease, such as asthma; increasing likelihood of respiratory effects in general population.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.
Source: Air Now 2015.	

The AQI for the 8-hour ozone standard was changed to reflect the current NAAQS of 70 parts per billion (ppb). Based on the AQI scale for the 8-hour ozone standard, the project area experienced no days in the last three years that would be categorized as very unhealthy (AQI 201–250), and as many as 155 days that were unhealthy (AQI 151–200) or unhealthy for sensitive groups (AQI 101–150), violating the 70-ppb standard as measured at the Porterville-Newcomb Street monitoring station. The highest reading was 91 parts per billion (ppb) in 2017 (AQI 164), compared with the cutoff for

unhealthy for sensitive groups (AQI 150—85 ppb) and the cutoff point for very unhealthy (AQI 201—106 ppb). The most days over the standard in the last three years were 80 days in 2016.

The other nonattainment pollutant of concern is $PM_{2.5}$. An AQI of 100 or lower is considered moderate and would be triggered by a 24-hour average concentration of 12.1 to 35.4 µg/m^3. An AQI of 101 to 105 or 35.5-55.4 µg/m^3 is considered unhealthful for sensitive groups. When concentrations reach this amount, it is considered an exceedance of the federal $PM_{2.5}$ standard. The monitoring station nearest the project (Visalia-Church Street) exceeded the standard on approximately 66 days in the three-year period spanning from 2015 to 2017. The most days that exceeded the standard occurred in 2017 with 27 days. People with respiratory or heart disease, the elderly and children are the groups most at risk. Unusually sensitive people should consider reducing prolonged or heavy exertion. The AQI of 151 to 200 is classified as unhealthy for everyone. This AQI classification is triggered when $PM_{2.5}$ concentration ranges from 55.4 to 150.4 µg/m^3. At this concentration, there is increasing likelihood of respiratory symptoms in sensitive individuals, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease, and in the elderly. People with respiratory or heart disease, the elderly, and children should limit prolonged exertion. Everyone else should reduce prolonged or heavy exertion. The highest concentration recorded at the Visalia-Church Street monitoring station in the last three years was 86.3 µg/m^3 (AQI 167) in 2015. At least 7 days in the last three years were in the unhealthy for everyone AQI range. At this concentration, increased aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly, and increased respiratory effects in general population would occur. People with respiratory or heart disease, the elderly, and children should avoid prolonged exertion; everyone else should limit prolonged exertion when the AQI exceeds this level. The relationship of the AQI to health effects in shown Table 4.

Table 4: Air Quality Index and Health Effects of Particulate Pollution

Air Quality Index/ $PM_{2.5}$ Concentration	Health Effects Description
AQI—51–100—Moderate	**Sensitive Groups**: Some people who may be unusually sensitive to particle.
Concentration 12.1–35.4 µg/m^3	**Health Effects Statements**: Unusually sensitive people should consider reducing prolonged or heavy exertion.
	Cautionary Statements: Unusually sensitive people: Consider reducing prolonged or heavy exertion. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier.
AQI—101–150—Unhealthy for Sensitive Groups	**Sensitive Groups**: Sensitive groups include people with heart or lung disease, older adults, children, and teenagers.
Concentration 35.5–55.4 µg/m^3	**Health Effects Statements**: Increasing likelihood of respiratory symptoms in sensitive individuals, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease, and the elderly.
	If you have heart disease: Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.

Table 4 (cont.): Air Quality Index and Health Effects of Particulate Pollution

Air Quality Index/ $PM_{2.5}$ Concentration	Health Effects Description
AQI—151–200—Unhealthy Concentration 55.5–150.4 µg/m^3	**Sensitive Groups:** Everyone.
	Health Effects Statements: Increased aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; increased respiratory effects in general population.
	Cautionary Statements: Sensitive groups: Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling. Everyone else: Reduce prolonged or heavy exertion. Take more breaks during outdoor activities.
AQI—201–300—Very Unhealthy Concentration 150.5–250.4 µg/m^3	**Sensitive Groups:** Everyone
	Health Effects Statements: Significant aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; significant increase in respiratory effects in general population.
	Cautionary Statements: Sensitive groups: Avoid all physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better. Everyone else: Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling to a time when air quality is better.

2.3.1 - Attainment Status

The EPA and the ARB designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National nonattainment areas are further designated marginal, moderate, serious, severe, or extreme as a function of deviation from standards.

Each standard has a different definition, or "form" of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the federal annual $PM_{2.5}$ standard is met if the three-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

The current attainment designations for the Air Basin are shown in Table 5. The Air Basin is designated nonattainment for ozone, PM_{10}, and $PM_{2.5}$.

Table 5: San Joaquin Valley Air Basin Attainment Status

Pollutant	State Status	National Status
Ozone—One Hour	Nonattainment/Severe	No Standard
Ozone—Eight Hour	Nonattainment	Nonattainment/Extreme
Carbon monoxide	Attainment/Unclassified	Merced, Madera, and Kings Counties are unclassified; others are in Attainment
Nitrogen dioxide	Attainment	Attainment/Unclassified
Sulfur dioxide	Attainment	Attainment/Unclassified
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
Lead	Attainment	No Designation/Classification
Source of State status: California Air Resources Board (ARB 2013c). Source of National status: U.S. Environmental Protection Agency (EPA 2016a). Source of Additional Status Information (SJVAPCD 2017a).		

2.4—Air Quality Plans and Regulations

Air pollutants are regulated at the national, state, and air basin or county level, and each agency has a different level of regulatory responsibility: the EPA regulates at the national level, the ARB at the state level, and the SJVAPCD at the air basin level.

The EPA is responsible for national and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans, provides research and guidance for air pollution programs, and sets National Ambient Air Quality Standards—also known as the federal standards described earlier.

A State Implementation Plan is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain federal standards. The State Implementation Plan for the State of California is administered by the ARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. California's State Implementation Plan incorporates individual federal attainment plans for regional air districts; specifically, an air district prepares their federal attainment plan, which is sent to ARB to be approved and incorporated into the California State Implementation Plan. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms. The ARB then submits the to the EPA for approval. After reviewing submitted SIPs, the EPA proposes to approve or disapprove all or part of each plan. The public has an opportunity to comment on the EPA's proposed action. EPA considers public input before taking final action on a state's plan. If EPA approves all or part of a SIP, those control measures are enforceable in federal court. If a state fails to submit an approvable plan or if EPA disapproves a plan, the EPA is required to develop a federal implementation plan (FIP). The most recent federally approved attainment plans for the SJVAPCD are the 2007 8-hour Ozone Attainment Plan and the 2012 $PM_{2.5}$ Plan for the 2006 $PM_{2.5}$ standard.

Areas designated nonattainment must develop air quality plans and regulations to achieve standards by specified dates, depending on the severity of the exceedances. For much of the country, implementation of federal motor vehicle standards and compliance with federal permitting requirements for industrial sources are adequate to attain air quality standards on schedule. For many areas of California, however, additional state and local regulation is required to achieve the standards. Regulations adopted by California are described below.

2.4.1 - California Regulations

Low-Emission Vehicle Program

The ARB first adopted Low-Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent continuing progress in emission reductions. As the State's passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 State Implementation Plan. In 2012, ARB adopted the LEV III amendments to California's LEV regulations. These amendments, also known as the Advanced Clean Car Program, include more stringent emission standards for model years 2017 through 2025 for both criteria pollutants and GHGs for new passenger vehicles (ARB 2012a).

On-Road Heavy-Duty Vehicle Program

The ARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California's emission standards for on-road heavy-duty engines and vehicles, as well as test procedures. ARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others (ARB 2013b).

The regulation applies to nearly all privately and federally owned diesel-fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low-use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks (ARB 2015b).

ARB Truck and Bus Regulation

The latest amendments to the Truck and Bus regulation became effective on December 31, 2014. The amended regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent.

The regulation applies to nearly all privately and federally owned diesel-fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than

14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low-use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks (ARB 2015a).

ARB Regulation for In-Use Off-Road Diesel Vehicles

On July 26, 2007, the ARB adopted a regulation to reduce DPM and nitrous oxide (NO_X) emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The regulation limits idling to no more than five consecutive minutes, requires reporting and labeling, and requires disclosure of the regulation upon vehicle sale. The ARB is enforcing that part of the rule with fines up to $10,000 per day for each vehicle in violation. Performance requirements of the rule are based on a fleet's average NO_X emissions, which can be met by replacing older vehicles with newer, cleaner vehicles or by applying exhaust retrofits. The regulation was amended in 2010 to delay the original timeline of the performance requirements, making the first compliance deadline January 1, 2014 for large fleets (over 5,000 horsepower), 2017 for medium fleets (2,501–5,000 horsepower), and 2019 for small fleets (2,500 horsepower or less).

ARB Airborne Toxic Control Measure for Asbestos

In July 2001, the ARB approved an Air Toxic Control Measure for construction, grading, quarrying, and surface mining operations to minimize emissions of naturally occurring asbestos. The regulation requires application of best management practices to control fugitive dust in areas known to have naturally occurring asbestos and requires notification to the local air district prior to commencement of ground-disturbing activities. The measure establishes specific testing, notification and engineering controls prior to grading, quarrying, or surface mining in construction zones where naturally occurring asbestos is located on projects of any size. There are additional notification and engineering controls at work sites larger than 1 acre in size. These projects require the submittal of a "Dust Mitigation Plan" and approval by the air district prior to the start of a project.

Construction sometimes requires the demolition of existing buildings where construction occurs. The project includes demolition of a house and several associated shed structures. Buildings often include materials containing asbestos. Asbestos is also found in a natural state, known as naturally occurring asbestos. Exposure and disturbance of rock and soil that naturally contain asbestos can result in the release of fibers into the air and consequent exposure to the public. Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. Sources of asbestos emissions include unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present.

The ARB has an Air Toxic Control Measure for construction, grading, quarrying, and surface mining operations, requiring the implementation of mitigation measures to minimize emissions of asbestos-laden dust. The measure applies to road construction and maintenance, construction and grading operations, and quarries and surface mines when the activity occurs in an area where naturally occurring asbestos is likely to be found. Areas are subject to the regulation if they are identified on maps published by the Department of Conservation as ultramafic rock units or if the Air Pollution

Control Officer or owner/operator has knowledge of the presence of ultramafic rock, serpentine, or naturally occurring asbestos on the site. The measure also applies if ultramafic rock, serpentine, or asbestos is discovered during any operation or activity. Review of the Department of Conservation maps indicates that no ultramafic rock has been found near the project site.

Diesel Risk Reduction Plan

The ARB's Diesel Risk Reduction Plan has led to the adoption of state regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles to reduce DPM emissions by about 90 percent overall from year 2000 levels. The projected emission benefits associated with the full implementation of this plan, including federal measures, are reductions in DPM emissions and associated cancer risks of 75 percent by 2010, and 85 percent by 2020 (ARB 2000).

2.4.2 - San Joaquin Valley Air Pollution Control District

The District is responsible for controlling emissions primarily from stationary sources. The District, in coordination with the eight countywide transportation agencies, is also responsible for developing, updating, and implementing air quality attainment plans for the Air Basin. The District also has roles under CEQA.

Ozone Plans

The Air Basin is designated nonattainment of state and federal health-based air quality standards for ozone. To meet Clean Air Act requirements for the one-hour ozone standard, the District adopted an Extreme Ozone Attainment Demonstration Plan in 2004, with an attainment date of 2010. Although the EPA revoked the federal 1-hour ozone standard effective June 15, 2005 and replaced it with an 8-hour standard, the requirement to submit a plan for that standard remained in effect for the San Joaquin Valley.

The planning requirements for the 1-hour plan remain in effect until replaced by a federal 8-hour ozone attainment plan. On March 8, 2010, the EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan, including revisions to the plan, effective April 7, 2010. However, the Air Basin failed to attain the standard in 2010 and was subject to a $29-million Clean Air Act penalty. The penalty is being collected through an additional $12 motor vehicle registration surcharge for each passenger vehicle registered in the Air Basin that will be applied to pollution reduction programs in the region. The District also instituted a more robust ozone episodic program to reduce emissions on days with the potential to exceed the ozone standards. On July 18, 2016, the EPA published in the Federal Register a final action determining that the San Joaquin Valley has attained the 1-hour ozone national ambient air quality standard. This determination is based on the most recent three-year period (2012–2014) of sufficient, quality-assured, and certified data. The penalty fees remain in place pending submittal of a demonstration that the San Joaquin Valley will maintain the 1-hour standard for 10 years (EPA 2016b).

The EPA originally classified the Air Basin as serious nonattainment for the 1997 federal 8-hour ozone standard with an attainment date of 2013. On April 30, 2007, the District's Governing Board adopted the 2007 Ozone Plan, which contained analysis showing a 2013 attainment target to be infeasible. The 2007 Ozone Plan details the plan for achieving attainment on schedule with an "extreme nonattainment" deadline of 2024. At its adoption of the 2007 Ozone Plan, the District also

requested a reclassification to extreme nonattainment. ARB approved the plan in June 2007, and the EPA approved the request for reclassification to extreme nonattainment on April 15, 2010.

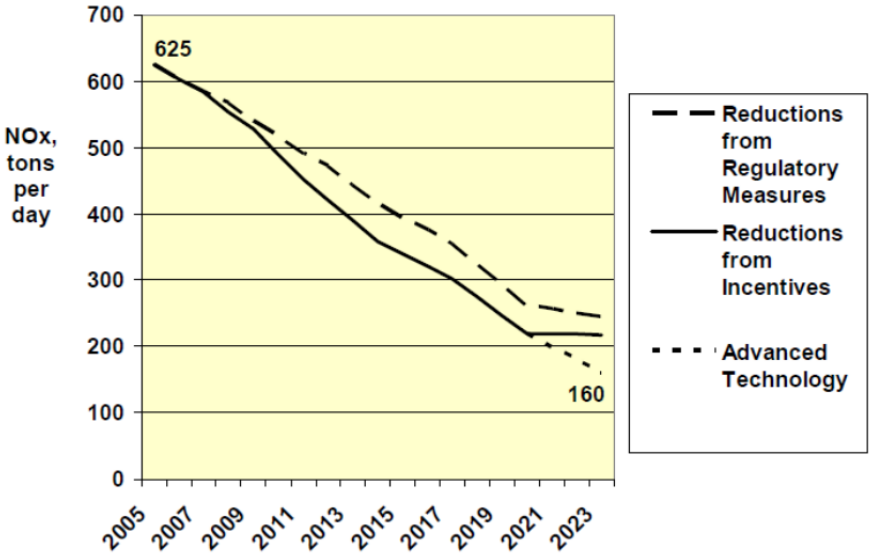
The 2007 Ozone Plan contains measures to reduce ozone and particulate matter precursor emissions to bring the Basin into attainment with the federal 8-hour ozone standard. The 2007 Ozone Plan calls for a 75 percent reduction of NO_X and a 25 percent reduction of reactive organic gases (ROG). Figure 5 displays the anticipated NO_X reductions attributed in the 2007 Ozone Plan. The plan, with innovative measures and a "dual path" strategy, assures expeditious attainment of the federal 8-hour ozone standard for all Air Basin residents. The District Governing Board adopted the 2007 Ozone Plan on April 30, 2007. The ARB approved the plan on June 14, 2007. The 2007 Ozone Plan requires yet to be determined "Advanced Technology" to achieve additional reductions after 2021, in order to attain the standard at all monitoring stations in the Air Basin by 2024 as allowed for areas designated extreme nonattainment by the federal Clean Air Act.

The Air Basin is designated an extreme ozone nonattainment area for the EPA's 2008 8-hour ozone standard of 75 ppb. The District's Governing Board approved the 2016 Plan for the 2008 8-Hour Ozone Standard on June 16, 2016. The ARB approved the attainment demonstration plan for the San Joaquin Valley on July 21, 2016 and transmitted the plan to EPA on August 24, 2016. The comprehensive strategy in this plan will reduce NO_X emissions by over 60 percent between 2012 and 2031, and will bring the San Joaquin Valley into attainment of the EPA's 2008 8-hour ozone standard as expeditiously as practicable, no later than December 31, 2031. The 2016 Ozone Plan predicts attainment of the 2008 standard by 2031 (SJVAPCD 2018a). To ensure that the plan is approvable with the necessary contingencies, the plan includes a "Black Box" that will require implementation of new advanced technologies and controls prior to the 2031 deadline.

The EPA Administrator signed the Final Rule revising the 8-hour ozone standard to 70 ppm on October 1, 2015. The new standard will require the SJVAPCD to prepare a new attainment to achieve the more stringent emission level within 20 years from the effective date of designation (EPA 2018).

State ozone standards do not have an attainment deadline but require implementation of all feasible measures to achieve attainment at the earliest date possible. This is achieved through compliance with the federal deadlines and control measure requirements.

Figure 5: San Joaquin Valley NO_X Emissions Forecast



(Source: 2007 Ozone Plan.)

Particulate Matter Plans

The Air Basin was designated nonattainment of state and federal health-based air quality standards for PM_{10}. The Air Basin is also designated nonattainment of state and federal standards for $PM_{2.5}$.

To meet Clean Air Act requirements for the PM_{10} standard, the District adopted a PM_{10} Attainment Demonstration Plan (Amended 2003 PM_{10} Plan and 2006 PM_{10} Plan), which has an attainment date of 2010. The District adopted the 2007 PM_{10} Maintenance Plan in September 2007 to assure the San Joaquin Valley's continued attainment of the EPA's PM_{10} standard. The EPA designated the valley an attainment/maintenance area for PM_{10} on September 25, 2008. Although the San Joaquin Valley has exceeded the standard since then, those days were considered exceptional events that are not considered a violation of the standard for attainment purposes.

The 2008 $PM_{2.5}$ Plan builds upon the comprehensive strategy adopted in the 2007 Ozone Plan to bring the Air Basin into attainment of the 1997 national standards for $PM_{2.5}$. The EPA has identified NO_X and SO_2as precursors that must be addressed in air quality plans for the 1997 $PM_{2.5}$ standards. The 2008 $PM_{2.5}$ Plan is a continuation of the District's strategy to improve the air quality in the Air Basin. The EPA issued final approval of the 2008 $PM_{2.5}$ Plan on November 9, 2011, which became effective on January 9, 2012. The EPA approved the emissions inventory, the reasonably available control measures/reasonably available control technology demonstration, reasonable further progress demonstration, attainment demonstration and associated air quality modeling, and the transportation conformity motor vehicle emissions budgets. The EPA also granted California's request to extend the attainment deadline for the San Joaquin Valley to April 5, 2015 and approved commitments to measures and reductions by the District and the ARB. Finally, it disapproved the State Implementation Plan's contingency provisions and issued a protective finding for transportation conformity determinations.

In December 2012, the District adopted the 2012 $PM_{2.5}$ Plan to bring the San Joaquin Valley into attainment of the EPA's 2006 24-hour $PM_{2.5}$ standard of 35 µg/m³. The ARB approved the District's 2012 $PM_{2.5}$ Plan for the 2006 standard at a public hearing on January 24, 2013 (SJVAPCD 2012). This plan seeks to bring the Valley into attainment with the standard by 2019, with the expectation that most areas will achieve attainment before that time.

The 2015 Plan for the 1997 $PM_{2.5}$ Standard approved by the District Governing Board on April 16, 2015—will bring the Valley into attainment of the EPA's 1997 $PM_{2.5}$ standard as expeditiously as practicable, but no later than December 31, 2020. The plan was required to request reclassification to Serious nonattainment and to extend the attainment date from 2018 to 2020 (SJVAPCD 2015b).

The 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard was adopted on September 15, 2016. This plan includes an attainment impracticability demonstration and request for reclassification of the Valley from Moderate nonattainment to Serious nonattainment. The 2016 $PM_{2.5}$ Plan is under ARB review (SJVAPCD 2017b).

The SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards on November 15, 2018. This plan provides a combined strategy to address the EPA federal 1997 annual $PM_{2.5}$ standard of 15 µg/m³ and 24-hour $PM_{2.5}$ standard of 65 µg/m³; the 2006 24-hour $PM_{2.5}$ standard of 35 µg/m³; and the 2012 annual $PM_{2.5}$ standard of 12 µg/m³. This plan demonstrates attainment of the federal $PM_{2.5}$ standards as expeditiously as practicable (SJVAPCD 2018b).

SJVAPCD Rules and Regulations

The SJVAPCD rules and regulations that may apply to the project include, but are not limited to the following:

Rule 2201—New and Modified Stationary Source Review Rule. The review of new and modified Stationary Sources of air pollution and to provide mechanisms including emission trade-offs by which Authorities to Construct such sources may be granted, without interfering with the attainment or maintenance of Ambient Air Quality Standards. Permits may be required if the project includes a diesel emergency generator.

Rule 2520—Federally Mandated Operating Permits provides a mechanism for issuing operating permits for new and modified sources of air contaminants, renewing operating permits for sources of air contaminants, revising, reopening, revoking, and terminating operating permits for sources of air contaminants, and incorporating requirements authorized by preconstruction permits issued under District Rule 2201 in accordance with requirements of 40 CFR Part 70, renewing permits

Rule 4001—New Source Performance Standards establishes specific standards, criteria, and requirements that new sources of air pollution or modification of existing sources must comply with.

Rule 4002—National Emissions Standards for Hazardous Air Pollutants. The purpose of the rule is to incorporate the National Emission Standards for Hazardous Air Pollutants from Part 61, Chapter I, Subchapter C, Title 40, Code of Federal Regulations and the National Emission Standards for Hazardous Air Pollutants for Source Categories from Part 63, Chapter I, Subchapter C, Title 40, Code

of Federal Regulations to protect the health and safety of the public from hazardous air pollutants, such as asbestos.

Rule 4101—Visible Emissions prohibits the emissions of visible air contaminants to the atmosphere.

Rule 4102—Nuisance. The purpose of this rule is to protect the health and safety of the public, and applies to any source operation that emits or may emit air contaminants or other materials. Agricultural activities are exempt from the nuisance rule.

Rule 4702—Internal Combustion Engines. The purpose of this rule is to limit the emissions of NO_X, carbon monoxide (CO), VOC, and sulfur oxides (SO_X) from internal combustion engines.

Regulation VIII—Fugitive PM_{10} Prohibitions. Rule 8081 is designed to reduce PM_{10} emissions (predominantly dust/dirt) from agricultural sources. Rule 8021 includes construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and trackout, etc. All development projects that involve soil disturbance are subject to at least one provision of the Regulation VIII series of rules.

CEQA

The District has three roles under CEQA:

1. **Lead Agency:** Responsible for preparing environmental analyses for its own projects (adoption of rules, regulations, or plans) or permit projects filed with the District where the District has primary approval authority over the project.
2. **Responsible Agency:** The discretionary authority of a responsible agency is more limited than a lead agency; having responsibility for mitigating or avoiding only the environmental effects of those parts of the project which it decides to approve, carry out, or finance. The District defers to the lead agency for preparation of environmental documents for land use projects that also have discretionary air quality permits, unless no document is prepared by the lead agency and potentially significant impacts related to the permit are possible. The District regularly submits comments on documents prepared by lead agencies to ensure that District concerns are addressed.
3. **Commenting Agency:** The District reviews and comments on air quality analyses prepared by other public agencies (such as the project).

The District also provides guidance and thresholds for CEQA air quality and GHG analyses. The result of this guidance, as well as state regulations to control air pollution, is an overall improvement in the Air Basin. In particular, the District's 2015 GAMAQI states the following:

1. The District's Air Quality Attainment Plans include measures to promote air quality elements in county and city general plans as one of the primary indirect source programs. The general plan is the primary long-range planning document used by cities and counties to direct development. Since air districts have no authority over land use decisions, it is up to cities and counties to ensure that their general plans help achieve air quality goals. Section 65302.1 of the California Government Code requires cities and counties in the San

Joaquin Valley to amend appropriate elements of their general plans to include data, analysis, comprehensive goals, policies, and feasible implementation strategies to improve air quality in their next housing element revisions.

2. The Air Quality Guidelines for General Plans (AQGGP), adopted by the District in 1994 and amended in 2005, is a guidance document containing goals and policy examples that cities and counties may want to incorporate into their General Plans to satisfy Section 65302.1. When adopted in a general plan and implemented, the suggestions in the AQGGP can reduce vehicle trips and miles traveled and improve air quality. The specific suggestions in the AQGGP are voluntary. The District strongly encourages cities and counties to use their land use and transportation planning authority to help achieve air quality goals by adopting the suggested policies and programs.

2.4.3 - Local

The County of Tulare General Plan was updated in 2012 and contains general provisions for air quality under various General Plan Elements, including the following policies that are applicable to the project:

Policies

- **AQ-1.3:** Cumulative Air Quality Impacts. The County shall require development to be located, designed, and constructed in a manner that would minimize cumulative air quality impacts. Applicants shall be required to proposed alternatives as part of the State CEQA process that reduce air emissions and enhance, rather than harm, the environment.
- **AQ-1.4:** Air Quality Land Use Compatibility. The County shall evaluate the compatibility of the industrial or other developments which are likely to cause undesirable air pollution with regard to proximity to sensitive land uses, and wind direction and circulation in an effort to alleviate effects upon sensitive receptors.
- **AQ-1.5:** California Environmental Quality Act (CEQA) Compliance. The County shall ensure that air quality impacts identified during the CEQA review process are consistently and reasonable mitigated when feasible.

Circulation Element

- **Goal 1:** A context-sensitive and “complete streets” transportation network that prioritizes effective connectivity and accommodates a comprehensive range of mobility needs.
  - **Policy 1.1: Multimodal network.** The City shall plan, design, and maintain the transportation network to promote safe and convenient travel for all users: pedestrian, bicyclists, transit riders, freight, and motorists.
  - **Policy 1.2: Transportation decisions.** Decisions should balance the comfort, convenience, and safety of pedestrian, bicyclists, and motorists.
  - **Policy 1.4: Jobs and housing.** Encourage infill development that would provide jobs and services closer to housing, and vice versa, to reduce citywide vehicle miles traveled and effectively utilize the existing transportation infrastructure.
  - **Policy 1.5: Neighborhood connectivity.** The transportation network shall provide multimodal access between neighborhoods and neighborhood-serving uses (educational, recreational, or neighborhood commercial uses).

- **Goal 3:** A multimodal transportation network that is safe and comfortable in the context of adjacent neighborhoods.
  - **Policy 3.11: Right-of-way design.** Design landscaped parkways, medians, and right-of-ways as aesthetic buffers to improve the community's appearance and encourage non-motorized transportation.
- **Goal 5:** A complete system of trails and pathways accessible to all residents.
  - **Policy 5.1: Complete street amenities.** Upgrade existing streets and design new streets to include complete street amenities, prioritizing improvements to bicycle and pedestrian connectivity or safety (consistent with the Bicycle Transportation Master Plan and other master plans).
  - **Development-funded facilities.** Require development to fund and construct facilities as shown in the Bicycle Transportation Plan when facilities are in or adjacent to the development.
  - **Policy 5.3: Pathways.** Encourage pathways and other pedestrian amenities in Urban Centers and new development 10 acres or larger.
  - **Policy 5.5: Pedestrian access.** Require sidewalks, paths, and crosswalks to provide access to schools, parks, and other activity centers to provide general pedestrian connectivity throughout the city.

Land Use Element

- **Goal 3:** Orderly and sustainable outward growth into three urban centers with neighborhoods that provide a balanced mix of land uses and development types to support a community lifestyle and small-town character.
  - **Policy 3.9: Connected development.** New development in Urban Centers must fully improve roadway, pedestrian, and bicycle systems within and adjacent to the proposed project and connect to existing urbanized development.

Open Space and Conservation Element

- **Goal 3:** A built environment that conserves and protects the use and quality of water and energy resources.
  - **Policy 3.5: Energy and water conservation.** Encourage new development and substantial rehabilitation projects to exceed energy and water conservation and reduction standards set in the California Building Code.

2.4.4 - Existing Sources of Toxic Emissions

The project is an existing source of toxic emissions but is not one of the sources identified in the ARB Air Quality Land Use Handbook for siting sensitive land uses (ARB 2005). A health risk assessment was prepared to address the project's impact related to toxic emissions.

SECTION 3: CLIMATE CHANGE SETTING

3.1—Climate Change

Climate change is a change in the average weather of the earth that is measured by alterations in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance, specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. In its Fourth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC 2007a). The report also concluded that "[w]arming of the climate system is unequivocal," and that "[m]ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

An individual project cannot generate enough GHG emissions to cause a discernible change in global climate. However, the project participates in the potential for global climate change by its incremental contribution of GHGs—and when combined with the cumulative increase of all other sources of GHGs—constitute potential influences on global climate change.

3.1.1 - Consequences of Climate Change in California

In California, climate change may result in consequences such as the following (from CCCC 2006 and Moser et al. 2009):

- **A reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st century because more winter rain will stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.

- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- **An increase in temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California's forests.** Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

Consequences of Climate Change in the Project Area

Figure 6 displays a chart of measured historical and projected annual average maximum temperatures in the project area. As shown in the figure, temperatures are expected to rise in all models used for the analysis. The results indicate that the annual mean temperatures are predicted to increase by 5.6 degrees Fahrenheit (°F) based on the 2070 to 2099 projections from a 1965 to 1990 baseline (CalAdapt 2017).

Water Supply

The project would rely on private wells to provide water to the project. The availability of surface water and the rate of groundwater recharge could decline if climate change were to result in reduced snowpack in the Sierra Nevada.

Wildfires

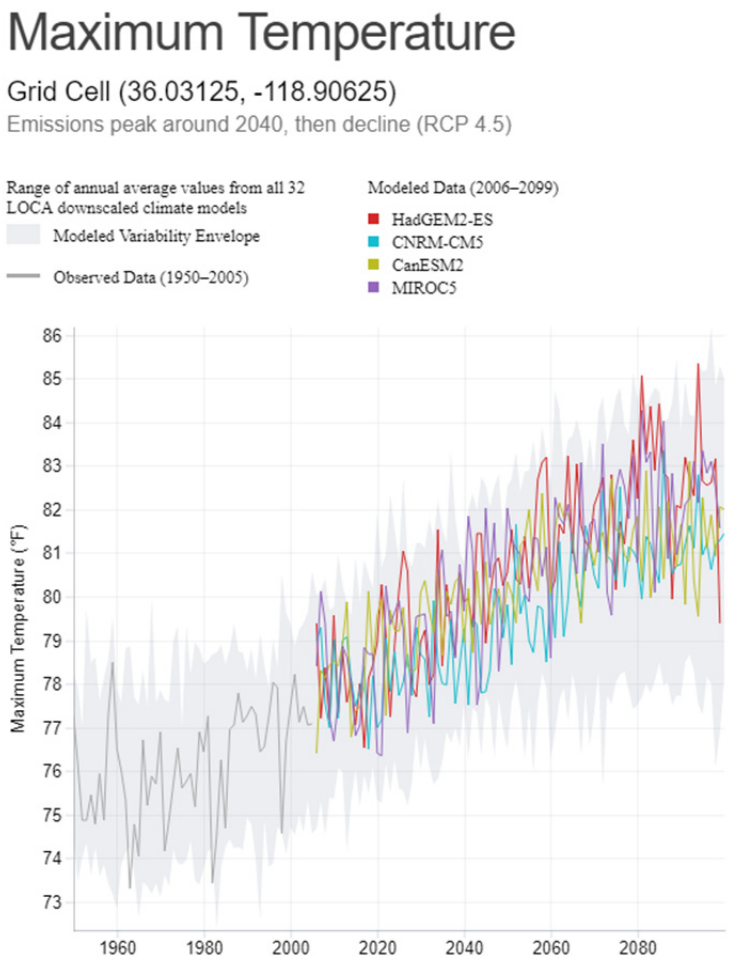
The project site is within a foothill grassland area that is subject to wildfire. The potential for increased temperatures and drought conditions due to climate change would result in increased risk from in the area.

Human Health Effects of GHG Emissions

GHG emissions from development projects would not result in concentrations that would directly impact public health. However, the cumulative effects of GHG emissions on climate change have the potential to cause adverse effects to human health.

In its report, Global Climate Change Impacts in the U.S. (2009), the U.S. Global Change Research Program has analyzed the degree to which impacts on human health are expected to impact the United States.

Figure 6: Observed and Projected Temperatures for Climate Change in the Project Area



Source: CalAdapt 2017.

Potential effects of climate change on public health include:

- Direct Temperature Effects: Climate change may directly affect human health through increases in average temperatures, which are predicted to increase the incidence of heat waves and hot extremes.
- Extreme Events: Climate change may affect the frequency and severity of extreme weather events, such as hurricanes and extreme heat and floods, which can be destructive to human health and well-being.
- Climate-Sensitive Diseases: Climate change may increase the risk of some infectious diseases, particularly those diseases that appear in warm areas and are spread by mosquitoes and other insects, such as malaria, dengue fever, yellow fever, and encephalitis.
- Air Quality: Respiratory disorders may be exacerbated by warming-induced increases in the frequency of smog (ground-level ozone) events and particulate air pollution (EPA 2009a).

Although there could be health effects resulting from changes in the climate and the consequences that can occur, inhalation of GHGs at levels currently in the atmosphere would not result in adverse health effects, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses. At very high indoor concentrations (not at levels existing outside), carbon dioxide (CO_2), methane, sulfur hexafluoride, and some chlorofluorocarbons can cause suffocation as the gases can displace oxygen (CDC 2010 and OSHA 2003).

3.2—Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as GHGs. The effect is analogous to the way a greenhouse retains heat. Common GHGs include water vapor, CO_2, methane, NO_X, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Natural processes and human activities emit GHGs. The presence of GHGs in the atmosphere affects the earth's temperature. It is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Climate change is driven by forcings and feedbacks. Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. Positive forcing tends to warm the surface while negative forcing tends to cool it. Radiative forcing values are typically expressed in watts per square meter. A feedback is a climate process that can strengthen or weaken a forcing. For example, when ice or snow melts, it reveals darker land underneath which absorbs more radiation and causes more warming. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a GHG compared with the reference gas, CO_2.

Individual GHG compounds have varying global warming potential and atmospheric lifetimes. CO_2, the reference gas for global warming potential, has a global warming potential of one. The global warming potential of a GHG is a measure of how much a given mass of a GHG is estimated to contribute to global warming. To describe how much global warming a given type and amount of GHG may cause, the carbon dioxide equivalent is used. The calculation of the carbon dioxide equivalent is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent reference gas, CO_2. For example, CH_4's warming potential of 25 indicates that CH_4 has 25 times greater warming effect than CO_2 on a molecule-per-molecule basis. A carbon dioxide equivalent is the mass emissions of an individual GHG multiplied by its global warming potential. GHGs defined by Assembly Bill (AB) 32 (see the Climate Change Regulatory Environment section for a description) include CO_2, CH_4, NO_X, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. They are described in Table 6. A seventh GHG, nitrogen trifluoride, was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. The global warming potential amounts are from IPCC Fourth Assessment Report (AR4). The new amounts have been incorporated into the CalEEMod 2016.3.2 used in this analysis.

Table 6: Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Nitrous oxide	Nitrous oxide (laughing gas) is a colorless GHG. It has a lifetime of 114 years. Its global warming potential is 298.	Microbial processes in soil and water, fuel combustion, and industrial processes.
Methane	Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 25.	Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, and decay of organic matter.
Carbon dioxide	Carbon dioxide (CO_2) is an odorless, colorless, natural GHG. Carbon dioxide's global warming potential is 1. The concentration in 2005 was 379 parts per million (ppm), which is an increase of about 1.4 ppm per year since 1960.	Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Chlorofluorocarbons	These are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). Global warming potentials range from 124 to 14,800.	Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987.
Perfluorocarbons	Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 7,390 to 12,200.	Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential of 22,800.	This gas is man-made and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.
Nitrogen trifluoride	Nitrogen trifluoride (NF_3) was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. It has a high global warming potential of 17,200.	This gas is used in electronics manufacture for semiconductors and liquid crystal displays.
Sources: Compiled from a variety of sources, primarily Intergovernmental Panel on Climate Change 2007a and 2007b.		

The State has begun addressing pollutants referred to as short-lived climate pollutants. Senate Bill (SB) 605, approved by the governor on September 14, 2014 required the ARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants by January 1, 2016. ARB was required to complete an emission inventory of these pollutants, identify research needs,

identify existing and potential new control measures that offer co-benefits, and coordinated with other state agencies and districts to develop measures. The Short-Lived Climate Pollutant Strategy was approved by the ARB on March 24, 2017 thus fulfilling these requirements. The strategy calls for reductions of 50 percent from black carbon, 40 percent from methane, and 40 percent from HFCs from the 2030 Business as Usual (BAU) inventory for these pollutants (ARB 2017b).

The short-lived climate pollutants include three main components: black carbon, fluorinated gases, and methane. Fluorinated gases and methane are described in Table 6 and are already included in the California GHG inventory. Black carbon has not been included in past GHG inventories; however, ARB has included it in its comprehensive strategy (ARB 2015c).

Ozone is another short-lived climate pollutant that will be part of the strategy. Ozone affects evaporation rates, cloud formation, and precipitation levels. Ozone is not directly emitted, so its precursor emissions—VOC and oxides of nitrogen (NO_X) on a regional scale and CH_4 on a hemispheric scale—will be subject of the strategy (ARB 2015c).

Black carbon is a component of fine particulate matter. Black carbon is formed by incomplete combustion of fossil fuels, biofuels, and biomass. Sources of black carbon within a jurisdiction may include exhaust from diesel trucks, vehicles, and equipment, as well as smoke from biogenic combustion. Biogenic combustion sources of black carbon include the burning of biofuels used for transportation, the burning of biomass for electricity generation and heating, prescribed burning of agricultural residue, and natural and unnatural wildfires. Black carbon is not a gas but an aerosol—particles or liquid droplets suspended in air. Black carbon only remains in the atmosphere for days to weeks, whereas other GHGs can remain in the atmosphere for years. Black carbon can be deposited on snow, where it absorbs sunlight, reduces sunlight reflectivity, and hastens snowmelt. Direct effects include absorbing incoming and outgoing radiation; indirectly, black carbon can also affect cloud reflectivity, precipitation, and surface dimming (cooling).

Global warming potentials for black carbon were not defined by the IPCC in its Fourth Assessment Report. The ARB has identified a global warming potential of 3,200 using a 20-year time horizon and 900 using a 100-year time horizon from the IPCC Fifth Assessment. Sources of black carbon are already regulated by ARB, and air district criteria pollutant and toxic regulations that control fine particulate emissions from diesel engines and other combustion sources (ARB 2015c). Additional controls on the sources of black carbon specifically for their GHG impacts beyond those required for toxic and fine particulates are not likely to be needed.

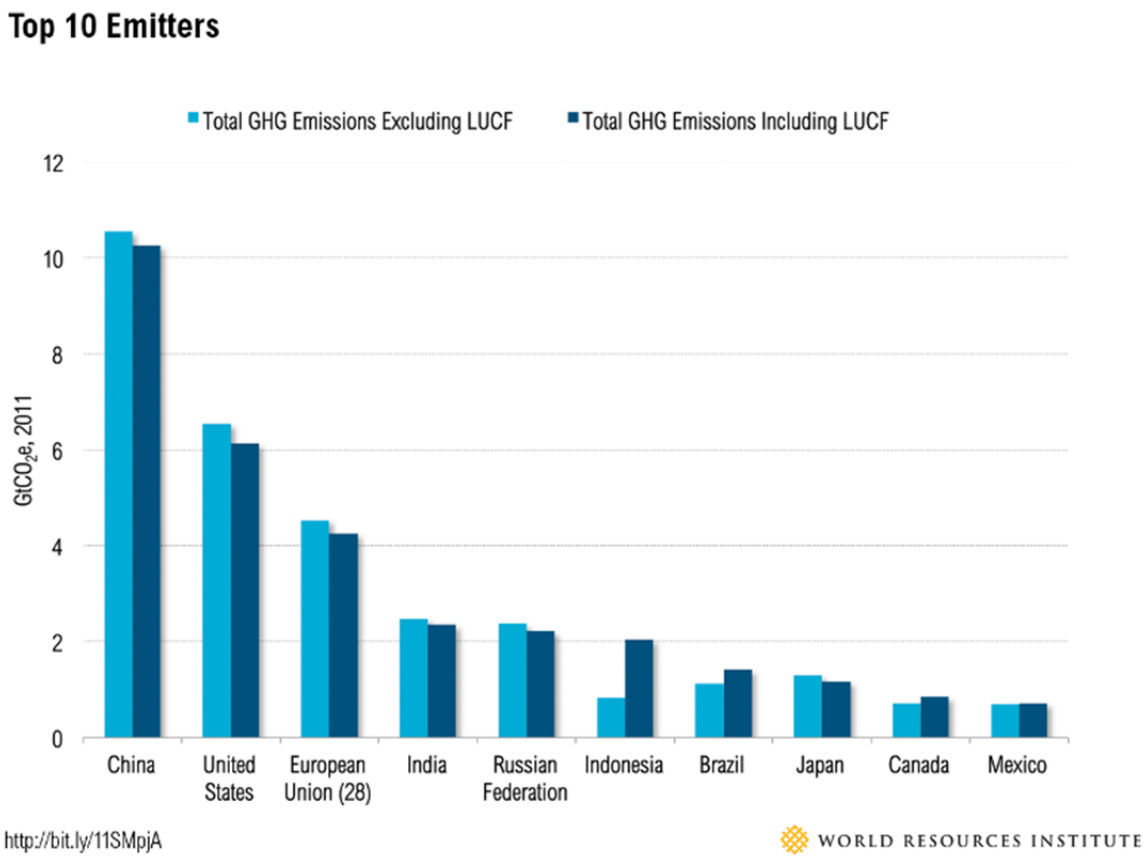
Water vapor is also considered a GHG. Water vapor is an important component of our climate system and is not regulated. Increasing water vapor leads to warmer temperatures, which causes more water vapor to be absorbed into the air. Warming and water absorption increase in a spiraling cycle. Water vapor feedback can also amplify the warming effect of other greenhouse gases, such that the warming brought about by increased CO_2 allows more water vapor to enter the atmosphere (NASA 2015b).

3.2.1 - Emissions Inventories

An emissions inventory is a database that lists, by source, the amount of air pollutants discharged into the atmosphere of a geographic area during a given time period. Emissions worldwide were

approximately 43,286 million metric tons of carbon dioxide equivalents ($MMTCO_2e$) in 2012. As shown in Figure 7, China was the largest GHG emitter with over 10 billion metric tons of CO_2e, and the United States was the second-largest GHG emitter with over 6 billion metric tons of CO_2e (WRI 2014).

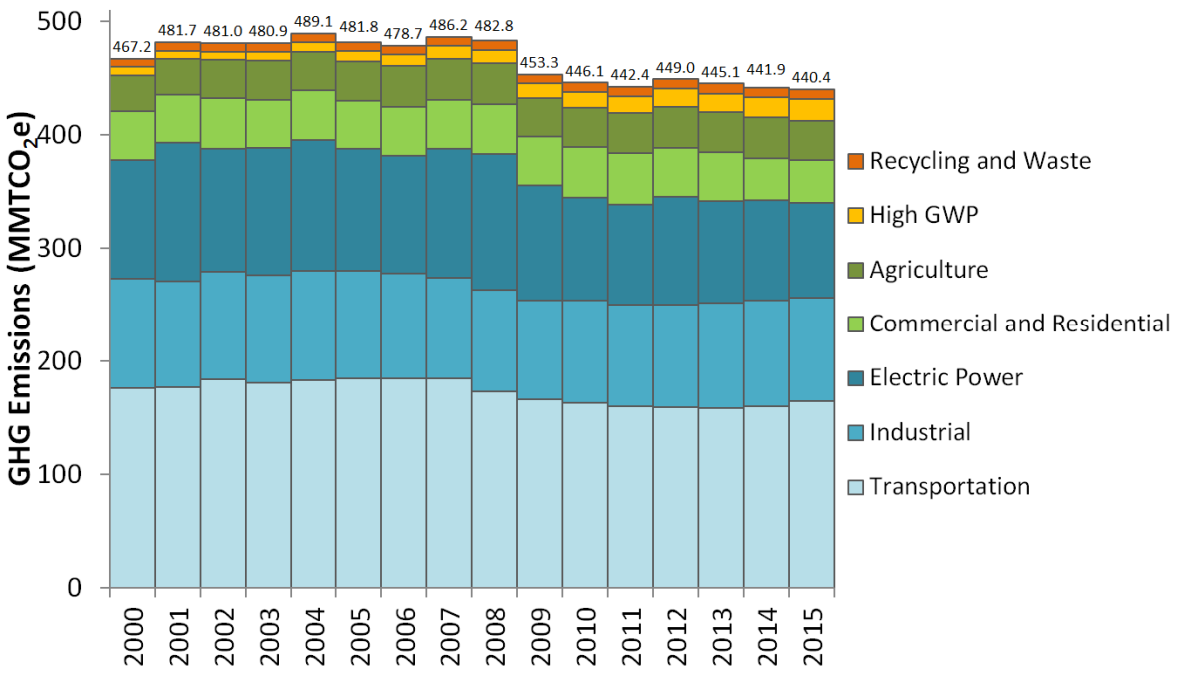
Figure 7: Greenhouse Gas Emissions Trends



Source: WRI 2014.

Figure 8 shows the contributors of GHG emissions in California between years 2000 and 2015 by Scoping Plan category. The main contributor was transportation. The second-highest sector was industrial, which includes sources from refineries, general fuel use, oil and gas extraction, cement plants, and cogeneration heat output. ARB reported that California's GHG emissions inventory was 440.4 $MMTCO_2e$ in 2015 (ARB 2016b).

Figure 8: Greenhouse Gas Emission Trends by Scoping Plan Category in California



Source: ARB 2016b.

The County of Tulare Climate Action Plan includes a greenhouse gas emission inventory. Table 7 shows the Tulare County's development-related inventories for the years 2015, 2020, and 2030 for each sector with 2020 and 2030 targets.

Table 7: Tulare County Emission Inventory, 2015 to 2030

Source	Emissions ($MTCO_2e$ per year)		
	2015	2020	2030
Transportation			
On-Road Vehicles	514,666	384,496	276,134
Off-Road Mobile	32,368	38,797	47,618
Locomotives	9,079	10,243	11,073
Aviation	17,708	22,407	28,663
Total	*573,821*	*455,946*	*363,490*
Energy			
Electricity	146,127	131,497	110,723
Energy—Natural Gas	59,215	61,417	65,917
Energy—Propane	51,490	52,231	56,067
Residential Woodburning	6,912	7,069	7,835
Total	*263,745*	*252,215*	*240,542*

Table 7 (cont.): Tulare County Emission Inventory 2015 to 2030

Source	Emissions ($MTCO_2e$ per year)		
	2015	2020	2030
Solid Waste			
Solid Waste—Landfill	176,925	160,088	160,088
Water & Wastewater			
Water	105	83	95
Wastewater Treatment	1,838	1,891	2,096
Total	*1,942*	*1,974*	*2,191*
Development-Related Emissions Total	*1,016,432*	*870,223*	*766,311*
Per Capita Emissions (8.8 CAP Target for 2020)	**6.92**	**5.76**	**4.57**
Development Related Emissions for CAP 2030 Target	**700,364**		
Per Capita Emissions Target for 2030	**4.18**		
Industrial			
Industrial Natural Gas	124,775	125,811	139,443
Industrial Electricity	48,415	48,508	36,178
Total	173,190	174,319	175,621
Agriculture			
Agriculture Electricity	297,327	267,086	182,166
Agricultural Burning	152,878	152,878	152,878
Agricultural Fertilizer	193,277	193,277	193,277
Agricultural Off-road Equipment	241,999	239,662	237,728
Agriculture—Dairy	7,779,107	8,494,766	9,926,085
Total	8,437,327	9,122,753	10,469,155
Grand Total	**9,626,950**	**10,167,294**	**11,411,087**

Notes:
2023 dairy emissions are used as a placeholder for 2030 dairy emissions since 2030 emission projections are unavailable; see Section 4.2.
$MTCO_2e$ = metric tons of carbon dioxide equivalents
Source of emissions: Appendix A—GHG Emission Estimates.

3.3—Regulatory Environment

3.3.1 - International

International organizations, such as the ones discussed below, have made substantial efforts to reduce GHGs. Preventing human-induced climate change will require the participation of all nations in solutions to address the issue.

Intergovernmental Panel on Climate Change. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change. The panel was tasked with assessing the scientific, technical, and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

United Nations Framework Convention on Climate Change (Convention). On March 21, 1994, the United States joined a number of countries around the world in signing the Convention. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

Kyoto Protocol. The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at average of 5 percent against 1990 levels over the five-year period from 2008–2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however, the Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2°C above pre-industrial levels, subject to a review in 2015. The UN Climate Change Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings are gradually gaining consensus among participants on individual climate change issues.

On September 23, 2014, more than 100 heads of state and government, along with leaders from the private sector and civil society met at the Climate Summit in New York hosted by the United Nations. At the Summit, heads of government, business, and civil society announced actions in areas that would have the greatest impact on reducing emissions, including: climate finance, energy, transport, industry, agriculture, cities, forests, and building resilience.

Paris Agreement. Parties to the United Nations Framework Convention on Climate Change (UNFCCC) reached a landmark agreement on December 12, 2015 in Paris, charting a fundamentally new course in the two-decade-old global climate effort. Culminating in a four-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen those efforts in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts, and undergo international review.

The agreement and a companion decision by parties were the key outcomes of the conference, known as the 21st session of the UNFCCC Conference of the Parties, or COP 21. Together, the Paris Agreement and the accompanying COP decision:

- Reaffirm the goal of limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees;
- Establish binding commitments by all parties to make "nationally determined contributions" (NDCs), and to pursue domestic measures aimed at achieving them;
- Commit all countries to report regularly on their emissions and "progress made in implementing and achieving" their NDCs, and to undergo international review;
- Commit all countries to submit new NDCs every five years, with the clear expectation that they will "represent a progression" beyond previous ones;
- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too;
- Extend the current goal of mobilizing $100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025;
- Extend a mechanism to address "loss and damage" resulting from climate change, which explicitly will not "involve or provide a basis for any liability or compensation;"
- Require parties engaging in international emissions trading to avoid "double counting;" and
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country's NDC (C2ES 2015a).

President Trump announced on June 1, 2017 that his administration will withdraw from the Paris Agreement. The administration indicated that it would follow the withdrawal process laid out in the Paris Agreement, which could take nearly 4 years to complete (White House 2017). California remains committed to combating climate change through programs designed to reduce GHGs.

3.3.2 - Federal Regulations

Prior to the last decade, there were no concrete federal regulations of GHGs or major planning for climate change adaptation. Since then, federal activity has increased. The following are actions regarding the federal government, GHGs, and fuel efficiency.

Greenhouse Gas Endangerment. *Massachusetts v. EPA* (Supreme Court Case 05-1120) was argued before the United States Supreme Court on November 29, 2006, in which it was petitioned that the EPA regulate four GHGs, including CO_2, under Section 202(a)(1) of the Clean Air Act. A decision was made on April 2, 2007, in which the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act. The Court held that the Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned

decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section "Clean Vehicles" below. After a lengthy legal challenge, the United States Supreme Court declined to review an Appeals Court ruling upholding the EPA Administrator findings (EPA 2009c).

Clean Vehicles. Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light-duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, the EPA and the Department of Transportation's National Highway Safety Administration announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon; that is, if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards would cut CO_2 emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the National Highway Safety Administration issued final rules on a second-phase joint rulemaking, establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012 (EPA 2012b). The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of CO_2 in model year 2025, which is equivalent to 54.5 miles per gallon (mpg) if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses on September 15, 2011, which became effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that began in the 2014 model year and achieve up to a 20-percent reduction in CO_2 emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10-percent reduction for gasoline

vehicles, and a 15-percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10-percent reduction in fuel consumption and CO_2 emissions from the 2014 to 2018 model years.

Mandatory Reporting of Greenhouse Gases. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.

New Source Review. The EPA issued a final rule on May 13, 2010 that establishes thresholds for GHGs, which will define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the federal code of regulations, the EPA states:

> This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the Clean Air Act, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to greenhouse gas sources, starting with the largest greenhouse gas emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources, but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for greenhouse gas emissions until at least April 30, 2016.

The EPA estimates that facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units. As required by a settlement agreement, the EPA proposed new performance standards for emissions of carbon dioxide for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatts would be required to meet an output-based standard of 1,000 pounds of carbon dioxide per megawatt-hour, based on the performance of widely used natural gas combined cycle technology. President Trump signed the Executive Order on Energy Independence (Executive Order 13783), which calls for a review of the Clean Power Plan. On October 16, 2017, the EPA issued the proposed rule Repeal of

Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (EPA 2017).

Cap-and-Trade. Cap-and-trade refers to a policy tool where emissions are limited to a certain amount and can be traded, or provides flexibility on how the emitter can comply. There is no federal GHG cap-and-trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap-and-trade.

The Regional Greenhouse Gas Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps CO_2 emissions from power plants, auctions CO_2 emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008.

The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners are California, British Columbia, Manitoba, Ontario, and Quebec. Currently, only California and Quebec are participating in the cap-and-trade program (C2ES 2015).

3.3.3 - California

Legislative Actions to Reduce GHGs

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as the landmark AB 32 California Global Warming Solutions Act of 2006 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

AB 32. The California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. “Greenhouse gases” as defined under AB 32 include CO_2, methane, NO_X, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. The ARB is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

> Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

The ARB approved the 1990 GHG emissions level of 427 $MMTCO_2e$ on December 6, 2007 (ARB 2007). Therefore, to meet the State's target, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. Emissions in 2020 in a BAU scenario were estimated to be 596 $MMTCO_2e$, which do not account for reductions from AB 32 regulations (ARB 2008a). At that rate, a 28 percent reduction was required to achieve the 427 $MMTCO_2e$ 1990 inventory. In October 2010, ARB prepared an updated 2020 forecast to account for the effects of the 2008 recession and slower forecasted growth. The 2020 inventory without the benefits of adopted regulation is now estimated at 545 $MMTCO_2e$. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels (ARB 2010).

Progress in Achieving AB 32 Targets and Remaining Reductions Required

The State has made steady progress in implementing AB 32 and achieving targets included in Executive Order S-3-05. The progress is evident in updated emission inventories prepared by ARB, which showed that the State inventory dropped below 1990 levels for the first time in 2016 (ARB 2018). The 2017 Scoping Plan Update includes projections indicating that the State will meet or exceed the 2020 target with adopted regulations (ARB 2017).

ARB Scoping Plan. The ARB's Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 to comply with AB 32 (ARB 2008). The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 GHG target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. Capped strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the inclusion of these emissions within the Cap-and-Trade program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for

any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. Uncapped strategies that will not be subject to the cap-and-trade emissions caps and requirements are provided as a margin of safety by accounting for additional GHG emission reductions (ARB 2008).

The ARB approved the First Update to the Scoping Plan (Update) on May 22, 2014. The Update identified the next steps for California's climate change strategy. The Update shows how California continues on its path to meet the near-term 2020 GHG limit, but also sets a path toward long-term, deep GHG emission reductions. The report established a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050. The Update identified progress made to meet the near-term objectives of AB 32 and defined California's climate change priorities and activities Climate for the next several years. The Update did not set new targets for the State, but described a path that would achieve the long-term 2050 goal of Executive Order S-05-03 for emissions to decline to 80 percent below 1990 levels by 2050. The Update included an estimate that reductions averaging 5.2 percent per year would be required after 2020 to achieve the 2050 goal.

Cap-and-Trade Program. The Cap-and-Trade Program is a key element of the Scoping Plan. It sets a statewide limit on sources responsible for 85 percent of California's greenhouse gas emissions, and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The program is designed to provide covered entities the flexibility to seek out and implement the lowest cost options to reduce emissions. The program conducted its first auction in November 2012. Compliance obligations began for power plants and large industrial sources in January 2013. Other significant milestones include linkage to Quebec's cap-and-trade system in January 2014 and starting the compliance obligation for distributors of transportation fuels, natural gas, and other fuels in January 2015 (ARB 2015d).

The Cap-and-Trade Program provides a firm cap, ensuring that the 2020 statewide emission limit will not be exceeded. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are guaranteed only on an accumulative basis. As summarized by ARB in the First Update:

> The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative (ARB 2014b).

The Cap-and-Trade Program works with other direct regulatory measures and provides an economic incentive to reduce emissions. If California's direct regulatory measures reduce GHG emissions more

than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will be responsible for relatively more emissions reductions. Thus, the Cap-and-Trade Program assures that California will meet its 2020 GHG emissions reduction mandate:

> The Cap-and-Trade Program establishes an overall limit on GHG emissions from most of the California economy—the "capped sectors." Within the capped sectors, some of the reductions are being accomplished through direct regulations, such as improved building and appliance efficiency standards, the [Low Carbon Fuel Standard] LCFS, and the 33 percent [Renewables Portfolio Standard] RPS. Whatever additional reductions are needed to bring emissions within the cap is accomplished through price incentives posed by emissions allowance prices. Together, direct regulation and price incentives assure that emissions are brought down cost-effectively to the level of the overall cap. The Cap-and-Trade Regulation provides assurance that California's 2020 limit will be met because the regulation sets a firm limit on 85 percent of California's GHG emissions. In sum, the Cap-and-Trade Program will achieve aggregate, rather than site specific or project-level, GHG emissions reductions. Also, due to the regulatory architecture adopted by ARB in AB 32, the reductions attributed to the Cap-and-Trade Program can change over time depending on the State's emissions forecasts and the effectiveness of direct regulatory measures (ARB 2014b).

AB 398. The Governor signed AB 398 on July 25, 2017 to extend the Cap-and-Trade Program to 2030. The legislation includes provisions to ensure that offsets used by sources are limited to 4 percent of their compliance obligation from 2021 through 2025 and 6 percent from 2026 through 2030. AB 398 also prevents Air Districts from adopting or implementing emission reduction rules from stationary sources that are also subject to the Cap-and-Trade Program (CAR 2017).

SB 32. The Governor signed SB 32 on September 8, 2016. SB 32 gives ARB the statutory responsibility to include the 2030 target previously contained in Executive Order B-30-15 in the next Scoping Plan update. SB 32 states that "In adopting rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions authorized by this division, the state [air resources] board shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than December 31, 2030." The 2017 Climate Change Scoping Plan Update addressing the SB 32 targets was adopted on December 14, 2017. The major elements of the framework proposed to achieve the 2030 target are as follows:

ARB approved the 2017 Scoping Plan Update in December 2017. The Scoping Plan Update provides the emission inventories and strategies that will enable cities and counties to develop local greenhouse gas targets and CEQA thresholds based on consistency with the 2030 State mandate.

1. SB 350
   - Achieve 50 percent Renewables Portfolio Standard (RPS) by 2030.
   - Doubling of energy efficiency savings by 2030.

2. Low Carbon Fuel Standard (LCFS)
   - Increased stringency (reducing carbon intensity 18 percent by 2030, up from 10 percent in 2020).
3. Mobile Source Strategy (Cleaner Technology and Fuels Scenario)
   - Maintaining existing GHG standards for light- and heavy-duty vehicles.
   - Put 4.2 million zero-emission vehicles (ZEVs) on the roads.
   - Increase ZEV buses, delivery and other trucks.
4. Sustainable Freight Action Plan
   - Improve freight system efficiency.
   - Maximize use of near-zero emission vehicles and equipment powered by renewable energy.
   - Deploy over 100,000 zero-emission trucks and equipment by 2030.
5. Short-Lived Climate Pollutant (SLCP) Reduction Strategy
   - Reduce emissions of methane and hydrofluorocarbons 40 percent below 2013 levels by 2030.
   - Reduce emissions of black carbon 50 percent below 2013 levels by 2030.
6. SB 375 Sustainable Communities Strategies
   - Increased stringency of 2035 targets.
7. Post-2020 Cap-and-Trade Program
   - Declining caps, continued linkage with Québec, and linkage to Ontario, Canada.
   - ARB will look for opportunities to strengthen the program to support more air quality co-benefits, including specific program design elements. In Fall 2016, ARB staff described potential future amendments including reducing the offset usage limit, redesigning the allocation strategy to reduce free allocation to support increased technology and energy investment at covered entities and reducing allocation if the covered entity increases criteria or toxics emissions over some baseline.
8. 20 percent reduction in greenhouse gas emissions from the refinery sector.
9. By 2018, develop Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink (ARB 2017c).

SB 375—The Sustainable Communities and Climate Protection Act of 2008. SB 375 was signed into law on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375—as codified in Public Resources Code Section 21159.28—states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss (1)

growth-inducing impacts or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network if the project:

1. Is in an area with an approved Sustainable Communities Strategy or an alternative planning strategy that the ARB accepts as achieving the greenhouse gas emission reduction targets;
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies); and
3. Incorporates the mitigation measures required by an applicable prior environmental document.

Tulare County Association of Governments adopted the 2014 Regional Transportation Plan (RTP) and Sustainable Communities Strategy on June 30, 2014. The RTP describes the strategy to achieve the SB 375 targets for Tulare County of 5 percent reduction in emission per capita by 2020 and 10 percent per capita by 2035. The primary tenant of the scenario is to increase the density of new housing development by 25 percent from baseline (2005) densities (TCAG 2014). The 2018 RTP/SCS updated the 2014 RTP/SCS and continues the planning vision for the Tulare County region laid out by the 2014 plan (TCAG 2018).

AB 1493 Pavley Regulations and Fuel Efficiency Standards. California AB 1493, enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011 (ARB 2013d).

The standards were phased in during the 2009 through 2016 model years. When fully phased in, the 2009–2012 standards will result in an approximately 22 percent reduction compared with the 2002 fleet, and the 2013–2016 standards will result in about a 30 percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation, rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant (ARB 2013e).

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The new rules will reduce pollutants from gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles, and hydrogen fuel cell cars. The regulations will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California (ARB 2011a).

SB 1368—Emission Performance Standards. In 2006, the State Legislature adopted SB 1368, which was subsequently signed into law by the governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the new law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. The California Public Utilities Commission adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 lbs CO_2 per megawatt-hour (MWh).

SB 1078—Renewable Electricity Standards. On September 12, 2002, Governor Gray Davis signed SB 1078, requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Governor Schwarzenegger also directed the ARB (Executive Order S-21-09) to adopt a regulation by July 31, 2010, requiring the State's load serving entities to meet a 33 percent renewable energy target by 2020. The ARB approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23. In 2011, the state legislature adopted this higher standard in SB X1-2. Renewable sources of electricity subject to the legislation include wind, small hydropower, solar, geothermal, biomass, and biogas.

SB 350—Clean Energy and Pollution Reduction Act of 2015. The legislature recently approved and the governor signed SB 350, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include: an increase in the renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the Bill because of opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electricity transmission markets and improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

SBX 7-7—The Water Conservation Act of 2009. The legislation directs urban retail water suppliers to set individual 2020 per capita water use targets and begin implementing conservation measures to achieve those goals. Meeting this statewide goal of 20 percent decrease in demand will result in a reduction of almost 2 million acre-feet in urban water use in 2020.

SB 100 California Renewable Portfolio Standard (2018). The goal of the program is to achieve that 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. The bill approved by Governor Brown on September 10, 2018 would require that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt-hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030 (California State Senate 2018).

Executive Orders Related to GHG Emissions

California's Executive Branch has taken several actions to reduce GHGs through the use of executive orders. Although not regulatory, they set the tone for the State and guide the actions of state agencies.

Executive Order S-3-05. On June 1, 2005, former California Governor Arnold Schwarzenegger announced through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

Executive Order B-30-15. On April 29, 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris late 2015. The executive order sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050, and directs the ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of $MMCO_2e$. The executive order also requires the State's climate adaptation plan to be updated every three years and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this executive order is not legally enforceable against local governments and the private sector. SB 32 includes a 2030 mandate matching the requirements of the Executive Order.

Executive Order S-01-07—Low Carbon Fuel Standard. The governor signed Executive Order S 01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the executive order established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB,

the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to ARB for consideration as an "early action" item under AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

The Low Carbon Fuel Standard was subject to legal challenge in 2011. Ultimately, ARB was required to bring a new LCFS regulation to the Board for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. The Office of Administrative Law (OAL) approved the regulation on November 16, 2015 (ARB 2015e).

Executive Order S-13-08. Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the order, the 2009 California Climate Adaptation Strategy (California Natural Resources Agency 2009) was adopted, which is the ". . . first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Orders B-55-18 Carbon Neutrality by 2045 (2018). This Executive Order signed on September 10, 2018 sets a new statewide goal to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the statewide targets of reducing greenhouse gas emissions (Brown 2018).

California Regulations and Building Codes

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat even with rapid population growth.

SB 97 and the CEQA Guidelines Update. Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states: "(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a)."

Section 21097 was also added to the Public Resources Code. This provided an exemption until January 1, 2010 for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006, or projects funded by the Disaster Preparedness and

Flood Prevention Bond Act of 2006—in stating that the failure to analyze adequately the effects of GHGs would not violate CEQA. The Natural Resources Agency completed the approval process and the Amendments became effective on March 18, 2010. The Natural Resources Agency adopted additional amendments related to greenhouse gases in the 2019 CEQA Guidelines Update adopted on December 28, 2018.

The 2010 CEQA Amendments along with the 2019 CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

Section 15064.4(b) of the CEQA Guidelines provides direction for lead agencies for assessing the significance of impacts of GHG emissions:

- The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; or
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project. In determining the significance of impacts, the lead agency may consider a project's consistency with the State's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.

Section 15064.4(c) states that a lead agency may use a model or methodology to estimate greenhouse gas emissions resulting from a project. The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change. The lead agency must support its selection of a model or methodology with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use.

The 2018 CEQA Guidelines include the following discussion regarding thresholds of significance.

> (d) Using environmental standards as thresholds of significance promotes consistency in significance determinations and integrates environmental review with other environmental program planning and regulation. Any public agency may adopt or use an environmental standard as a threshold of significance. In adopting or using an environmental standard as a threshold of significance, a public agency shall

explain how the particular requirements of that environmental standard reduce project impacts, including cumulative impacts, to a level that is less than significant, and why the environmental standard is relevant to the analysis of the project under consideration. For the purposes of this subdivision, an "environmental standard" is a rule of general application that is adopted by a public agency through a public review process and that is all of the following:

(1) a quantitative, qualitative or performance requirement found in an ordinance, resolution, rule, regulation, order, plan or other environmental requirement;
(2) adopted for the purpose of environmental protection;
(3) addresses the environmental effect caused by the project; and,
(4) applies to the project under review.

In addition, the 2018 amendments revised Appendix G Checklist questions to include a new question specifically on energy conservation.

CEQA emphasizes that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impacts analysis (see CEQA Guidelines Section 15130(f)).

California Supreme Court GHG Ruling

In a November 30, 2015 ruling, the *California Supreme Court in Center for Biological Diversity (CBD) v. California Department of Fish and Wildlife (CDFW)* on the Newhall Ranch project, concluded that whether the project was consistent with meeting statewide emission reduction goals is a legally permissible criterion of significance, but the significance finding for the project was not supported by a reasoned explanation based on substantial evidence. The Court offered potential solutions on pages 25 to 27 of the ruling to address this issue summarized below.

Specifically, the Court advised that:

- **Substantiation of Project Reductions from BAU**. A lead agency may use a BAU comparison based on the Scoping Plan's methodology if it also substantiates the reduction a particular project must achieve to comply with statewide goals. The Court suggested a lead agency could examine the "data behind the Scoping Plan's business-as-usual model" to determine the necessary project-level reductions from new land use development at the proposed location (p. 25).
- **Compliance with Regulatory Programs or Performance Based Standards**. "A lead agency might assess consistency with A.B. 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities. (See Final Statement of Reasons, supra, at p. 64 [greenhouse gas emissions 'may be best analyzed and mitigated at a programmatic level.']) To the extent a project's design features comply with or exceed the regulations outlined in the Scoping Plan and adopted by the Air Resources Board or other state agencies, a lead agency could appropriately rely on their use as showing compliance with 'performance based standards' adopted to fulfill 'a statewide . . . plan for the reduction or mitigation of greenhouse gas emissions.' (CEQA Guidelines § 15064.4(a)(2), (b)(3); see also id., § 15064(h)(3) [determination that impact is not cumulatively considerable

may rest on compliance with previously adopted plans or regulations, including 'plans or regulations for the reduction of greenhouse gas emissions'].)" (p. 26).

- **Compliance with GHG Reduction Plans or Climate Action Plans (CAPs)**. A lead agency may utilize "geographically specific GHG emission reduction plans" such as climate action plans or greenhouse gas emission reduction plans to provide a basis for the tiering or streamlining of project-level CEQA analysis (p. 26).
- **Compliance with Local Air District Thresholds**. A lead agency may rely on "existing numerical thresholds of significance for greenhouse gas emissions" adopted by, for example, local air districts (p. 27).

Therefore, consistent with CEQA Guidelines Appendix G, the three factors identified in CEQA Guidelines Section 15064.4 and the recently issued Newhall Ranch opinion, the GHG impacts would be considered significant if the project would:

- Conflict with a compliant GHG Reduction Plan if adopted by the lead agency;
- Exceed the SJVAPCD GHG Reduction Threshold; or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emission of GHGs.

3.3.4 - San Joaquin Valley Air Pollution Control District

Climate Change Action Plan

On August 21, 2008, the SJVAPCD Governing Board approved a proposal called the Climate Change Action Plan (CCAP). The CCAP began with a public process bringing together stakeholders, land use agencies, environmental groups, and business groups to conduct public workshops to develop comprehensive policies for CEQA guidelines, a carbon exchange bank, and voluntary GHG emissions mitigation agreements for the Board's consideration. The CCAP contains the following goals and actions:

- Develop GHG significance thresholds to address CEQA projects with GHG emission increases.
- Develop the San Joaquin Valley Carbon Exchange for banking and trading GHG reductions.
- Authorize use of the SJVAPCD's existing inventory reporting system to allow use for GHG reporting required by AB 32 regulations.
- Develop and administer GHG reduction agreements to mitigate proposed emission increases from new projects.
- Support climate protection measures that reduce greenhouse gas emissions as well as toxic and criteria pollutants. Oppose measures that result in a significant increase in toxic or criteria pollutant emissions in already impacted areas.

On December 17, 2009, the SJVAPCD Governing Board adopted "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA," and the policy "District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency." The SJVAPCD concluded that the existing science is inadequate to support

quantification of the impacts that project-specific GHG emissions have on global climatic change. The SJVAPCD found the effects of project-specific emissions to be cumulative, and without mitigation, their incremental contribution to global climatic change could be considered cumulatively considerable. The SJVAPCD found that this cumulative impact is best addressed by requiring all projects to reduce their GHG emissions, whether through project design elements or mitigation.

The SJVAPCD's approach is intended to streamline the process of determining if project-specific GHG emissions would have a significant effect. Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less than significant cumulative impact. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources, and must have a certified final CEQA document.

For non-exempt projects, those projects for which there is no applicable approved plan or program, or those projects not complying with an approved plan or program, the lead agency must evaluate the project against performance-based standards and would require the adoption of design elements, known as a Best Performance Standard, to reduce GHG emissions. The Best Performance Standards (BPS) have not yet fully been established, though they must be designed to achieve a 29 percent reduction when compared with the BAU projections identified in ARB's AB 32 Scoping Plan.

BAU represents the emissions that would occur in 2020 if the average baseline emissions during the 2002–2004 period were grown to 2020 levels, without control. Thus, these standards would carry with them pre-quantified emissions reductions, eliminating the need for project-specific quantification. Therefore, projects incorporating BPS would not require specific quantification of GHG emissions, and automatically would be determined to have a less than significant cumulative impact for GHG emissions.

For stationary source permitting projects, BPS means, "The most stringent of the identified alternatives for control of GHG emissions, including type of equipment, design of equipment and operational and maintenance practices, which are achieved-in-practice for the identified service, operation, or emissions unit class." The SJVAPCD has identified BPS for the following sources: boilers; dryers and dehydrators; oil and gas extraction; storage, transportation, and refining operations; cogeneration; gasoline dispensing facilities; volatile organic compound control technology; and steam generators.

For development projects, BPS means, "Any combination of identified GHG emission reduction measures, including project design elements and land use decisions that reduce project-specific GHG emission reductions by at least 29 percent compared with business as usual."

Projects not incorporating BPS would require quantification of GHG emissions and demonstration that BAU GHG emissions have been reduced or mitigated by 29 percent. As stated earlier, ARB's adjusted inventory reduced the amount required by the State to achieve 1990 emission levels from 29 percent to 21.7 percent to account for slower growth experienced since the 2008 recession. According to SJVAPCD guidance, quantification of GHG emissions would be required for all projects for which the lead agency has determined that an environmental impact report is required,

regardless of whether the project incorporates BPS. The SJVAPCD has not yet adopted BPS for development projects, so quantification of project emissions is required.

San Joaquin Valley Carbon Exchange

The SJVAPCD initiated work on the San Joaquin Valley Carbon Exchange in November 2008. The purpose of the carbon exchange is to quantify, verify, and track voluntary GHG emissions reductions generated within the San Joaquin Valley. However, the SJVAPCD has pursued an alternative strategy that incorporates the GHG emissions into its existing Rule 2301—Emission Reduction Credit Offset Banking that formerly only addressed criteria pollutants. The SJVAPCD is also participating with the California Air Pollution Control Officers Association (CAPCOA), of which it is a member, in the CAPCOA Greenhouse Gas Reduction Exchange (GHG Rx). The GHG Rx is operated cooperatively by air districts that have elected to participate. Participating districts have signed a Memorandum of Understanding (MOU) with CAPCOA and agree to post only those credits that meet the Rx standards for quality. The objective is to provide a secure, low-cost, high-quality greenhouse gas exchange for credits created in California. The GHG Rx is intended to help fulfill compliance obligations or mitigation needs of local projects subject to environmental review, reducing the uncertainty of using credits generated in distant locations. The SJVAPCD currently has no credits posted to the GHG Rx as of this writing (CAPCOA 2018).

Rule 2301

While the Climate Change Action Plan indicated that the GHG emission reduction program would be called the San Joaquin Valley Carbon Exchange, the District incorporated a method to register voluntary GHG emission reductions into its existing Rule 2301—Emission Reduction Credit Banking through amendments of the rule. Amendments to the rule were adopted on January 19, 2012. The purposes of the amendments to the rule include the following:

- Provide an administrative mechanism for sources to bank voluntary GHG emission reductions for later use.
- Provide an administrative mechanism for sources to transfer banked GHG emission reductions to others for any use.
- Define eligibility standards, quantitative procedures, and administrative practices to ensure that banked GHG emission reductions are real, permanent, quantifiable, surplus, and enforceable.

Tulare County Association of Governments

Regional Transportation Plan

The Tulare County Association of Governments (TCAG) is the Regional Transportation Planning Agency (RTPA) for the Tulare County region. TCAG adopted the 2014 Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS) that included the County's first Sustainable Community Strategy to comply with SB 375. The RTP is a planning document prepared in cooperation with the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), the California Department of Transportation (Caltrans), and other stakeholders, including transportation system users. The SCS is intended to show how integrated land use and transportation planning can lead to lower GHG emissions from autos and light trucks. The 2018

RTP/SCS updated the previous RTP/SCS adopted by TCAG in June 2014 and continues the planning vision for the Tulare County region laid out by the 2014 plan (TCAG 2018).

The preferred scenario emerging from this development process and selected by the TCAG Governing Board is the "Blueprint" scenario. This scenario while updated and distinct, continues the strategy and vision of the adopted 2014 plan, updating it to reflect changes to land use and transportation projects in the interim. Whereas the 2014 plan incorporated a new Regional Housing Needs Allocation (RHNA) Plan and Regional Growth Forecast, the 2018 RTP/SCS utilizes the same planning assumptions with regard to housing needs as the prior adopted plan. While TCAG must update the RTP/SCS every four years, the RHNA planning process occurs every eight years, every other RTP/SCS cycle.

The Blueprint scenario selected for the RTP/SCS would provide a 13.1 percent reduction in per capita CO_2 emissions by 2020, 17.9 percent by 2035 compared to the ARB regional target for Tulare County of 5 percent by 2020 and 10 percent by 2035 (TCAG 2018).

3.3.5 - Local

The County of Tulare (County) adopted the Tulare County Climate Action Plan (CAP) in August 2012 (Tulare County 2012). With the adoption of the 2017 Scoping Plan, the County proceeded with the 2018 CAP Update. The 2018 CAP Update adopted in December 2018 incorporates new baseline and future year inventories to reflect the latest information and updates the County's strategy to address the SB 32 2030 target (Tulare County 2018).

The CAP has no strategies applicable to mining operations. The focus of the CAP is on new commercial and residential projects. The County has no authority to regulate the fuel used for industrial production and large industrial sources are subject to Cap-and-Trade. The project's emissions are primarily due the operation of off-road equipment and haul trucks used to transport the aggregate mined to construction sites that utilize the material. Electricity used at the site is purchased from Southern California Edison (SCE), which is subject to RPS requirements for using increased percentages of renewable energy. Trucks and vehicle fuels are subject to ARB regulations described earlier in this section. Theses State regulations constitute the primary strategy for reducing GHG emissions from the project to achieve AB 32 and SB 32 targets. A CAP consistency analysis is included in the project GHG analysis.

Waste Diversion

With the passage of SB 1016, the Per Capita Disposal Measurement System, only per capita disposal rates are measured. Targets are based on the per capita disposal rates. For 2015, the target rate was 4.1 pounds per person. The County's disposal rates were well below the target rate of 6.2 pounds per day (PPD) per person and 21.3 PPD per employee. The rate reported was 16.4 PPD per employee in 2016 and 18.7 PPD per employee in 2017 (CalRecycle 2019).

SECTION 4: MODELING PARAMETERS AND ASSUMPTIONS

4.1—Model Selection and Guidance

Air pollutant emissions can be estimated by using emission factors and a level of activity. Emission factors represent the emission rate of a pollutant given the activity over time; for example, grams of NO_X per horsepower-hour or grams of NO_X per vehicle mile traveled. The ARB has published emission factors for on-road mobile vehicles/trucks in the EMFAC mobile source emissions model and emission factors for off-road equipment and vehicles in the OFFROAD emissions model. An air emissions model (or calculator) combines the emission factors and the various levels of activity and outputs the emissions for the various pieces of equipment. Emission factors for mining activities are from EPA AP-42 Emission Factors.

The California Emissions Estimator Model (CalEEMod) version 2016.3.2 was developed by the South Coast Air Quality Management District in cooperation with other air districts throughout the State. CalEEMod is designed as a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with construction and operation from a variety of land uses. Modeling of on-road and off-road mobile sources was conducted using CalEEMod.

The modeling follows District guidance where applicable from its GAMAQI. The models used in this analysis are summarized as follows:

- Offroad Construction and Mining emissions: CalEEMod, version 2016.3.2 and USEPA AP-42 emission factors
- Operational emissions: CalEEMod, version 2016.3.2
- Mobile source emissions (on-site): EMFAC 2017

4.2—Air Pollutants and GHGs Assessed

4.2.1 - Criteria Pollutants Assessed

The following air pollutants are assessed in this analysis:

- Reactive organic gases (ROG)
- Nitrogen oxides (NO_X)
- Carbon monoxide (CO)
- Sulfur dioxide (SO_2)
- Particulate matter less than 10 microns in diameter (PM_{10})
- Particulate matter less than 2.5 microns in diameter ($PM_{2.5}$)

The project would not emit ozone directly into the atmosphere; however, the project would emit ozone precursors, ROG and NO_X, that participate in the formation of ozone in the atmosphere. Other criteria pollutants such as vinyl chloride, hydrogen sulfide, lead, and sulfates were not included because of their low levels of emissions from the project.

As noted previously, the project would emit ultrafine particles. However, there is currently no standard separate from the $PM_{2.5}$ standards for ultrafine particles and there is no accepted methodology to quantify or assess the significance of such particles.

4.2.2 - Toxic Air Contaminants

As noted earlier, diesel particulate matter or DPM comprises the largest contribution to airborne cancer risk in California. Emissions of DPM from the operation of the project were quantified for purposes of assessing the project's potential health risk impacts.

4.2.3 - Greenhouse Gases Assessed

This analysis is restricted to GHGs identified by AB 32, which include: carbon dioxide, methane, NO_X, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The project would generate a variety of GHGs, including several defined by AB 32 such as carbon dioxide, methane, and NO_X.

The project may emit GHGs that are not defined by AB 32. For example, the project may generate aerosols through emissions of DPM from the vehicles and trucks that would access the project site. Aerosols are short-lived particles, as they remain in the atmosphere for about one week. Black carbon is a component of aerosol. Studies have indicated that black carbon has a high global warming potential; however, the Intergovernmental Panel on Climate Change states that it has a low level of scientific certainty (IPCC 2007a).

Water vapor could be emitted from evaporated water used for landscaping, but this is not a significant impact because water vapor concentrations in the upper atmosphere are primarily due to climate feedbacks rather than emissions from project-related activities.

The project would emit nitrogen oxides and volatile organic compounds, which are ozone precursors. Ozone is a GHG; however, unlike the other GHGs, ozone in the troposphere is relatively short-lived and can be reduced in the troposphere on a daily basis. Stratospheric ozone can be reduced through reactions with other pollutants.

Certain GHGs defined by AB 32 would not be emitted by the project. Perfluorocarbons and sulfur hexafluoride are typically used in industrial applications, none of which would be used by the project. Therefore, it is not anticipated that the project would emit perfluorocarbons or sulfur hexafluoride.

4.3—Construction Modeling Assumptions

The project will not include construction of any new buildings or structures. The project is the continuation of operations at an existing rock mining facility at higher throughput rates and eventual expansion into an adjacent area.

4.4—Operation

Operational emissions are from the mining activities that occur on the project site and from the transport of the aggregate produced to end users in the market area served by the facility. The major

sources are summarized below. The modeling assumption details and the modeling results are included in Appendix A of this report.

4.4.1 - Project Schedule

The project was assumed to begin operating at throughput levels higher than allowed by existing permits in 2020. Modeling for a scenario where the new maximum permitted throughput was reached in 2020 resulted in emissions exceeding the SJVAPCD thresholds of significance for regional NO_X emissions. An additional scenario with lower annual throughput in 2020 was modeled to determine an amount of increase in throughput that could be accommodated without exceeding the threshold. A third scenario was prepared for 2025 to determine emissions with compliance with regulations at the proposed permit limit by 2025 or later. Actual increased operations are dependent on market demand for aggregate. In order to reach the permit limit by 2025, the project would be required to implement mitigation measures to reduce project emissions.

4.4.2 - Regional Modeling and Localized Modeling Assumptions

The modeling assumptions used to determine regional emissions for comparison to SJVAPCD ton per year thresholds differ in some cases with the modeling assumptions used to determine localized pollutant concentrations and health risks that require air dispersion modeling. These differences stem from the applicable methodologies used to estimate the emissions for each purpose. The regional criteria pollutant estimates rely primarily on the CalEEMod land use emission model whereas the emission estimates for on-site vehicle travel and idling use the ARB EMFAC mobile source emission model to allow accurate distribution of the emissions sources to specific locations on the project site and specific vehicle types, fuel types, and travel speeds.

The sources of emissions included in this assessment are from permitted-operational equipment, off-road operational equipment, on-road haul trucks, off-road haul trucks, water trucks, work vehicles, fugitive dust, and surface blasting of material reservoirs. These emission sources are described in the following sections.

4.4.3 - Project Baseline and Throughput Limits

The Deer Creek Mine's current Tulare County permits allow annual throughput of up to 1,000,000 tons per year. The actual emissions have not reached the permitted limit; therefore, in accordance with CEQA case law, the baseline throughput must be used to determine the increase in throughput with the project. The Deer Creek Mine has recently achieved a throughput of approximately 800,000 tons per year, which is used as the project baseline condition. The proposed new throughput limit is 1,500,000 tons per year; therefore, the increase from the project is 700,000 tons per year. The project is expected to gradually increase production to meet anticipated increase in market demand. The timing of the increase is not known, so the initial modeling is based on achieving an increase of 400,000 tons above baseline by 2020 and the new throughput limit in 2025. An additional limit at 395,000 tons per year was assessed to identify the throughput that could be accommodated without exceeding NO_x emissions thresholds in 2020. The modeling for year 2025 reflects the reductions from implementation of mitigation measures in later years and the benefits of ARB truck regulations on project emissions. The change in throughput limits for permitted and baseline conditions is provided in Table 8.

Table 8: Project Material Throughput Limits

Activity	Existing Permit Limit	Increase with Expansion	New Permit Limit
Annual Production (tons/year)	1,000,000	500,000	1,500,000
Maximum 2-Way Truck Trips per Day	376	224	600
Maximum Daily Throughput (Tons/Day)	4,700	2,800	7,500
Baseline Production (tons/year)	800,000	700,000	1,500,000
Average 2-Way Truck Trips per Day from Baseline	284	249	533
Maximum 2-Way Truck Trips per Day from Baseline	301	299	600

Note:
Maximum daily throughput is higher than average daily throughput to accommodate periods when demand for aggregate is at its highest.
Source: Appendix A.

4.4.4 - Permitted Equipment

The increase in project activity is within the limits of the existing SJVAPCD air permits, as shown in Table 9. The District estimated exhaust and dust emissions for the permitted equipment to be used for total operations when it issued its Authority to Construct Permit. No modifications would be made to the existing permits. No change in use would occur to the portable drum mix asphaltic concrete plant and the LPG-fired process heater. The rock crushing equipment would have an increase in throughput of an additional 700,000 tons (total with the project would be 1,500,000 tons) and would not exceed the permitted amount of 1,500,000. Therefore, an estimate of the emissions increase for the project from the additional 700,000 tons of throughput has been prepared based on the emissions limits established for the equipment by the existing air permit.

The permitted equipment currently used at the site is described in Table 9.

Table 9: Permitted Equipment

Permit Number	Description	Maximum Throughput	Specific Equipment
S-4136-3-6	Rock crushing and screening plant.	10,000 tons/day 1,500,000 tons/year	Grizzly feeder, jaw crusher, Omnicone rock crusher, Svedala G-Gone crusher, Nordberg cone crusher, three 3-deck screens, 120-foot radial stacker, associated conveyors, and wash plant consisting of blade mill, Krebs water cyclone, Gyrodisk rock crusher, dewatering screen, triple-deck wet screen with a sand screw, and stacking conveyors

Table 9 (cont.): Permitted Equipment

Permit Number	Description	Maximum Throughput	Specific Equipment
S-4136-1-0	Permit-Exempt Equipment Registration. LPG-fired process heater	LPG gas usage of 7,000 gallons/day and 1,100,000 gallons/year	2.0 MMBTU/Hr Hy-Way Model HYFG200-LN S/N 5708-112304 LPG-fired process heater with a power flame model LNIC2-G-20A Low NO_X burner and flue gas recirculation
N-4013-2-3	Portable drum mix asphaltic concrete plant	3,500 tons/day of asphaltic concrete produced 808 tons/day of reclaimed asphalt pavement (RAP) received or processed 549,500 tons/year of asphaltic concrete produced 126,878 tons/year of RAP received or processed LPG gas usage of 7,000 gallons/day and 1,100,000 gallons/year	Portable drum mix asphaltic concrete plant consisting of five aggregate storage bins, one 75 MMBTU/Hr rotary drum dryer with a Hauck model Novastar 75 low- NO_X burner, associated elevators, one drag slat conveyor all served by an all-mix model 300 baghouse, one reclaim asphalt pavement (RAP) feed hopper with associated conveyors and screen and two 200-ton storage silos, each with a truck loadout.
Source: San Joaquin Valley Air Pollution Control District 2013.			

The District's permits for the stationary equipment include the following conditions that would reduce fugitive dust:

- For the wash plant, the moisture content of the material being processed by the blade mill and triple-deck screen shall not be less than 6 percent by weight.
- For the wash plant, the moisture content of the material carried by the conveyors shall not be less than 4 percent by weight.
- All transfer points, except those belonging to the wash plant operation, shall be equipped with a wet suppression system maintaining minimum product moisture content of 4 percent by weight.
- The crushers and the Eljay Triple Deck Screen shall be equipped with wet suppression systems maintaining minimum product moisture content of 4 percent by weight.
- All stockpiled material shall be maintained at minimum moisture content of 4 percent by weight unless the stockpiled material does not result in any visible emissions.
- All conveyors shall be covered unless the material being transferred does not result in any visible emissions.

4.4.5 - On-site Off-road Equipment

Off-road mobile equipment is not subject to District permits. Non-permitted emission sources include off-road support equipment such as the various loaders, excavators, etc., drilling/blasting emissions, truck loading, material storage emissions from active storage piles, and haul truck emissions. Air pollutant emissions can be estimated by using emission factors and a level of activity. Emission factors represent the emission rate of a pollutant given the activity over time; for example, grams of NO_X per horsepower hour or over distance traveled; for example, grams of NO_X per vehicle mile traveled. The ARB has published emission factors for on-road mobile vehicles/trucks in the EMFAC mobile source emissions model and emission factors for off-road equipment and vehicles in the OFFROAD emissions model. An air emissions model (or calculator) combines the emission factors and the various levels of activity and outputs the emissions for the various pieces of equipment. The assessment used the CalEEMod construction equipment component to quantify the off-road equipment emissions. The CalEEMod construction mitigation component was used to provide the actual EPA emission certification tier for each piece of equipment. An additional run assuming all EPA Tier 4 or EPA Tier 4 interim was prepared to provide additional emission reductions needed prior to reaching the new maximum throughput limit of 1,500,000 tons per year. The analysis also determined off-road equipment emissions for the interim 400,000-ton-per-year increase to determine if SJVAPCD thresholds would be exceeded at that throughput amount.

The applicant provided a list of equipment that currently exists on the site and indicated that current equipment would be adequate to increase production by 700,000 tons from the current baseline amount of 800,000 tons by increasing the number of hours the equipment is used. The entire production would grow to 1,500,000 tons. For CEQA purposes, the analysis evaluated the increase of both the interim 400,000 tons per year and 700,000 tons per year project throughput amounts. The current permitted throughput of 1,000,000 tons per year has not been reached and should not be used as the existing baseline under CEQA case law. The applicant provided an estimate of the number of hours the equipment currently operated. The increase in material throughput was assumed to require a proportional increase in equipment use to produce 1,500,000 tons of material. The equipment was assumed to continue to operate 225 days per year. Table 10 lists the current equipment and increased hours estimated to accommodate the increased throughput. An estimate of the expanded hours at 400,000 tons was assumed to be four-sevenths of the hours shown in Table 10.

Table 10: Equipment and Hours of Operation

No.	Equipment	Make	Year	Model	Tier	Increase in Max Hours/Day	Days/Year	Increase in Hours/Year	Horsepower	Load Factor
1	Rubber-tire loader	Caterpillar	2007	980H	3	7.9	225	1,772	355	0.37
2	Rubber-tire loader	Caterpillar	2015	980M	4	7.9	225	1,772	378	0.37
3	Rubber tire loader	Caterpillar	2001	980G	2	7.9	225	1,772	300	0.37
4	Crawler Tractor	Caterpillar	1993	D8N	0	0.9	225	197	300	0.44
5	Excavator	Hitachi	1991	EX700H	0	7.9	80	630	450	0.38
6	Excavator	Hitachi	2005	ZX 800	2	7.9	80	630	454	0.38
7	Excavator	Terex	2007	300LC-2	3	7.9	80	630	197	0.38
8	Excavator	John Deere	2012	2010 GLC	4i	2.6	185	486	175	0.38
9	Skid Steer Loader	Bobcat	2006	S220	2	7.9	225	1,772	66.8	0.37
10	Skid Steer Loader	Bobcat	2017	S570	4	7.9	225	1,772	66.8	0.37
11	Forklift	Genie	2007	GTH-1048	2	7.9	225	1,772	82	0.2
12	Boom Lift	Genie	1999	S60	2	0.9	185	162	48	0.31
13	Bore/Drill Rig	Atlas Copco	2011	Flexiroc T50 Rock Drill	4i	7.9	225	1,772	417	0.5
14	Crane	Grove	1988	RT74	0	3.5	25	88	200	0.29
15	Welder	Bobcat	2008	250	3	0.4	185	81	12.5	0.45
16	Off-highway Truck	Caterpillar	1996	D400E	1	7.9	225	1,772	385	0.38
17	Off-highway Truck	Komatsu	2010	HD325-7	3	7.9	225	1,772	385	0.38

Note:
Max (maximum) hours/day = hours per year divided by number of days equipment is operated.
Source: Deer Creek Rock Company equipment list as of May 2019.
Source for load factor: CalEEMod default.

4.4.6 - Drilling and Blasting

The applicant drills five days per week to create holes for a licensed contractor to insert explosives to break up larger rocks that cannot be moved or broken. Currently, the licensed contractor blasts once per week. There would be no increase in daily blasting activities as a result of the project; however, it is assumed that more days per year of blasting would be required to meet the volume generated by expanded project operations. The explosive ANFO (ammonium nitrate and fuel oil) is used, which has a composition of ammonium nitrate with a small percentage of fuel oil. The emissions from blasting were estimated using EPA AP-42 emission factors. The emissions were assumed to increase proportionally with throughput.

4.4.7 - Dust from Stockpiles, Loading, Wind Erosion, and Unpaved Road Dust

Dust is generated from the on-site storage piles, during loading of the material onto trucks, vehicle travel on unpaved roads, and from wind erosion. These emissions were estimated using EPA AP-42 emission factors as discussed in Appendix A. It was assumed that watering the haul roads and active storage piles at least three times per day would reduce dust emissions by at least 61 percent according to CalEEMod 2016.3.2 fugitive dust mitigation estimates and to achieve compliance with SJVAPCD Regulation VIII.

4.4.8 - Off-Road Haul Trucks

The project includes two existing 40-ton haul trucks that would transport material to the processing plant. Off-road truck emissions are calculated with CalEEMod based on the hours of operation per day. The applicant estimated that the two trucks would operate 9 hours per day to process the current maximum throughput or 7.2 hours per day, based on the current baseline of 800,000 tons per year. An estimate of the number of hours of operation was prepared based on the annual increase in throughput. Exhaust emissions are based on hours of operation per day and per year. Table 11 shows the estimated hours and mileage for each year of operation until the full increase is reached. In order to estimate unpaved road dust from haul trucks, the distance traveled per day is required. Mileage was estimated using Google Earth to measure the distance from the rock crusher to the active mining areas that will be the source of the materials. The average distance of the off-road haul trucks was estimated at 0.5 mile or 1 mile per round trip. Daily trips are based on the truck capacity and the volume of material moved during each scenario.

Table 11: Off-Road Haul Truck Activity

Scenario	Hours per Day	Travel Distance/Day (miles)
Baseline (800.000 tons/yr)	7.2	89
With Project (1,500,000 tons/yr)	16.9	167
Increase from Project (700,000 tons/yr)	**6.9**	**82**
Note: Based on travel speed of 15 miles per hour (mph) Source: Appendix A: Modeling Assumptions.		

4.4.9 - On-site On-Road Mobile Vehicles

The applicant indicated that eight on-road mobile vehicles are used in the operations of the facility and that there would be no increase in the equipment shown below:

- Water Truck (2)
- GMC 2500 Pickup (2)
- Fleetwood Mechanic's Truck (2)
- Ford F-250 (2)

The water trucks would continue watering access roads at the current rate. The added throughput would require additional water application during truck loading and unloading operations to prevent fugitive dust emissions. The increase in water truck use was assumed to be proportional with the increase in material throughput. Current usage for 800,000 tons per year requires approximately 7.9 hours per day of water truck use. Increasing throughput to 1,500,000 tons per year would require 14.8 hours per day of water truck use, including 2 hours of idling while filling the water trucks, and applying water to truck loading and unloading operations areas. The remaining hours would be used for road watering and traveling to the on-site water refill location. The project would result in an increase of about 7 hours per truck or 14 hours for two trucks. At an average speed of 10 miles per hour, the water trucks would travel approximately 138 miles per day. The water truck emissions were estimated using EMFAC 2017 emissions for heavy-duty diesel construction trucks (T7 Construction).

The on-site work trucks are used to travel around the site for supervision and to transport work crews to where needed to repair broken equipment and prepare for various operations. The repair trucks were assumed to conduct 4 repairs per day each with a roundtrip trip length of 0.8 mile or 3.2 miles per day. The pickup trucks were assumed to make one round trip per hour to the active operations area with a distance of 1 mile per round trip. Based on this scenario, the repair truck trips would increase from 4 to 6 or 7 miles per day and the pickup trucks would increase from 9 to 17 or 17 miles per day each. Mileage for the 400,000-ton increase was assumed to be proportionally less than the 700,000-ton increase.

4.4.10 - On-Road Haul Trucks

Haul trucks used for transporting the aggregate from the site to its point of delivery would generate exhaust and paved road dust emissions. Haul truck trips are based on the number of truckloads of material that may be processed per day and per year.

An interim project throughput increase of 400,000 tons would increase the on road haul truck trips from 142 loads per day (284 round trips) to 213 loads per day (426 round trips), resulting in a net increase of 71 truckloads per day (142 round trips).The proposed project would also increase heavy-heavy-duty diesel truck trips from the current baseline of 142 loads per day (284 round-trips) to 267 loads per day (533 round-trips), resulting in a net increase of 124 loads per day or 249 round-trips. The current maximum permitted is 376 truckloads daily. The project would increase the maximum daily truck loads to 600. A summary of the on-road haul trips is shown in Table 12. Trip length is based on the market area for the project. Deliveries are expected to average 25 miles per off-site trip. The total off-site emissions were estimated in CalEEMod in its operational trip module. However, for purposes of estimating emissions for use in the air dispersion model for the health risk assessment, an off-site travel distance of 0.25 mile was assumed in keeping with the guidance from the SJVAPCD on the off-site extent for modeling of a source's localized emissions.

The on-site emissions used for the analysis of localized criteria pollutant impacts and the health risk assessment were estimated using emission factors from EMFAC2017 in order to account for the slower vehicle speeds and operating conditions while traveling on-site. The emission factors used

were for the year 2020 for both existing and project increments (increase of 400,000 tons/year) and for the year 2025 for the full development of the project (700,000 tons/year). Emission factors for later years have fewer emissions, because the model accounts for the retirement of older trucks and their replacement with new trucks meeting the latest emission standards. Using the same year for both existing and project increment equalizes the emissions so that the increment can be assessed. It was assumed that the haul trucks would each idle on-site for 15 minutes per day for loading their contents and for stopping at the scales when arriving and departing the site.

Table 12: Off-site Haul Trips

Scenario	Truck Loads/Year	Truck Trips/Year	Average Truck Loads/Day	Max Truck Trips/Day
Baseline	32,000	64,000	142	301
Truck Loads from 400k ton/year Increase	16,000	32,000	71	170
Truck Loads with Full Project	60,000	120,000	267	600
Increase from Full Project	**28,000**	**56,000**	**124**	**299**

Note:
Truck loads per year based on annual throughput limits. Max truck trips per day based on 1.2 times average daily rates.
Source: Appendix A: Modeling Assumptions.

4.4.11 - Employee Trips

The analysis estimates employee commute trip generation based on the increase in employees projected for the project. The project would increase the number of employees from the existing 27 to the proposed 30 employees. The CalEEMod default trip length of 16.8 miles for rural land uses was used. It was assumed that the fleet mix for employee vehicles would include light-duty vehicles. The increase of three employees generating 6 trips per day was used in the analysis. These emissions are modeled in CalEEMod in the construction phases under worker trips.

4.4.12 - Modeling Assumptions for Localized Criteria Pollutant Analysis and Health Risk Assumption

Most of the operational assumptions listed above are also used for the criteria pollutant analysis and health risk assessment; however, the criteria pollutant assessment is based on maximum daily and annual emissions for on-site equipment only, and the HRA is based on annual emissions for on-site sources only and for 0.25 mile of off-site truck travel.

The analysis of the localized impacts from the criteria pollutants NO_2, CO, PM_{10}, and $PM_{2.5}$ was prepared for the project. In addition, an HRA was prepared to determine the increase in health risk resulting from the project on sensitive receptors near the project. The closest sensitive receptor is an existing residence located approximately 50 meters to the south of the project's southern property line.

The analysis followed SJVAPCD and OEHHA guidance. Detailed assumptions for the criteria pollutant assessment and the HRA are provided in Appendix B. General modeling assumptions are shown in Table 13. Emission source configurations are provided in Table 14.

Table 13: Air Dispersion Model General Modeling Assumptions

Feature	Assumption
Air Dispersion Model	• EPA AERMOD Model (Version 18081)
Terrain processing	• Complex terrain; elevations were obtained for the project site using the EPA AERMAP terrain data pre-processor.
Regulatory Dispersion Options	• Default Assumptions Used
Land Use	• Rural
Meteorological Data	• Porterville, CA for the years 2006 to 2009 from the SJVAPCD
NO_X to NO_2 Conversion	• Assumes 100 percent conversion of NO_X to NO_2
Receptor locations and heights	• Receptors placed at locations of the nearest sensitive receptors • 0 meters receptor height

Table 14: Air Dispersion Model Emission Source Configurations

Emission Source Type	Geometric Configuration	Relevant Assumptions
On-Road Haul Trucks—Exhaust	Line volume sources on-site and off-site	• Emission height: 6 feet • Emission width: 12 feet • On-site vehicle travel:0.7 mile • Off-site vehicle travel (for health risk assessment): 0.7 mile • Vehicle: heavy-heavy-duty diesel truck T7 tractor) • Emission factor: EMFAC2017 (average from 5 to 15 mph) for on-site travel and (average from 5 to 25 mph for off-site travel):
On-Road Haul Trucks—Idling	Point Sources	• Emission height: 12 feet • Stack Temperature: 200F • Stack exit velocity: 51.7 m/sec • Stack diameter: 0.3 foot • Duration of idling: 15 minutes per event location • Idling locations: weigh station on entry, weight station on exit, material loading area • Vehicle class: heavy-heavy duty diesel truck(T7 Tractor) • Emission factor: EMFAC2017
Off-Road Haul Trucks—Exhaust	Line volume source on-site	• Emission height: 6 feet • Emission width: 12 feet • On-site vehicle travel:1.0 mile round trip • Vehicle: heavy-heavy duty diesel truck(T7 Single construction) • Emission factor: EMFAC2017 (average from 5 to 15 mph) for on-site travel
Off-Road Haul Trucks—Idling	Point Sources	• Emission height: 12 feet • Stack Temperature:200F • Stack exit velocity: 51.7 m/sec • Stack diameter: 0.3 foot • Duration of idling: 15 minutes per event location

Table 14 (cont.): Air Dispersion Model Emission Source Configurations

Emission Source Type	Geometric Configuration	Relevant Assumptions
		• Idling locations: excavation loading area and offloading at rock crusher • Vehicle class: heavy-heavy duty diesel truck (T7 Single Construction) • Emission factor: EMFAC2017
On-site Operational Equipment	Point Sources	• Emission height: 12 feet • See Table 10 for equipment list • Emission locations: excavation area and material loading area
Water Trucks—Exhaust	Line volume sources on-site	• Emission height: 6 feet • Emission width: 12 feet • Vehicle: heavy-heavy duty diesel truck (T7 Construction) • Source locations: along travel route of the on-road haul trucks and along route of off-road haul trucks • Emission factor: EMFAC2017 (average from 5 to 15 mph) for on-site travel
Water Trucks—Idling	Point Source	• Emission height: 12 feet • Stack Temperature:200F • Stack exit velocity: 51.7 m/sec • Stack diameter: 0.3 feet • Duration of idling: 15 minutes per location • Idling location: vehicle maintenance area for fill up • Vehicle class: heavy-heavy duty diesel truck (T7 Construction) • Emission factor: EMFAC2017
Work Vehicles—Exhaust	Line volume sources on-site	• Emission height: 6 feet • Emission width: 12 feet • Vehicle: light-heavy-duty diesel truck • Source locations: along travel route of the on-road haul trucks and along route of off-road haul trucks • Emission factor: EMFAC2017 (average from 5 to 15 mph) for on-site travel
Work Vehicles—Idling	Point Sources	• Emission height: 12 feet • Stack Temperature:200°F • Stack exit velocity: 51.7 m/sec • Stack diameter: 0.3 foot • Duration of idling: 15 minutes per location • Idling locations: vehicle maintenance area and excavation area • Vehicle classes: light heavy-duty diesel trucks • Emission factor: EMFAC2017
Blasting	Point Source	• Emission factor: EPA AP-42, Chapter 13.3-1 • Location: excavation area
Fugitive Dust—Haul Trucks	Line Volume Sources on-site	• On-road haul trucks • Off-road haul trucks from excavation loading area to unloading area at rock crusher
Fugitive Dust—Storage Piles	Circular Area Source	• Located within the On-road haul truck loading area

Table 14 (cont.): Air Dispersion Model Emission Source Configurations

Emission Source Type	Geometric Configuration	Relevant Assumptions
Fugitive Dust—On-site Operating Equipment	Point Sources	● One source located at the excavation area ● Second source located at the on-road truck loading area
Fugitive Dust—Off-road Haul Truck Unloading Area	Point Source	● Located at the rock crusher area ● Emissions derived from EPA AP-42 for Unpaved Roads
Fugitive Dust—Excavation Area	Point Source	● Located at the excavation area ● Emissions derived from EPA AP-42
Fugitive Dust—Loading Area for on-road haul trucks	Point Source	● Located at the on-road truck loading area
Source: see Appendix B		

The analysis requires the preparation of an inventory of emission sources at the project site. The inventory includes average annual emissions to estimate the long-term health impacts of toxic air contaminants emitted by the project and the maximum daily emissions to determine if the project would exceed daily ambient air quality standards and hourly in the case of NO_2, which is an hourly standard.

The project maximum daily emissions are based on the new daily permit limit of 15,000 tons per day or 600 haul truck loads per day. The existing permit limit is 376 haul truck loads per day; however, the facility has not reached its limit, so as a conservative assumption the existing baseline for daily truck loads was estimated at 301 haul truck loads per day. This assumes that the maximum daily throughput would be proportional to current baseline and the permitted limit. The increase from baseline from the project using this assumption would be 299 truckloads per day to reach the maximum truckloads of 600 per day.

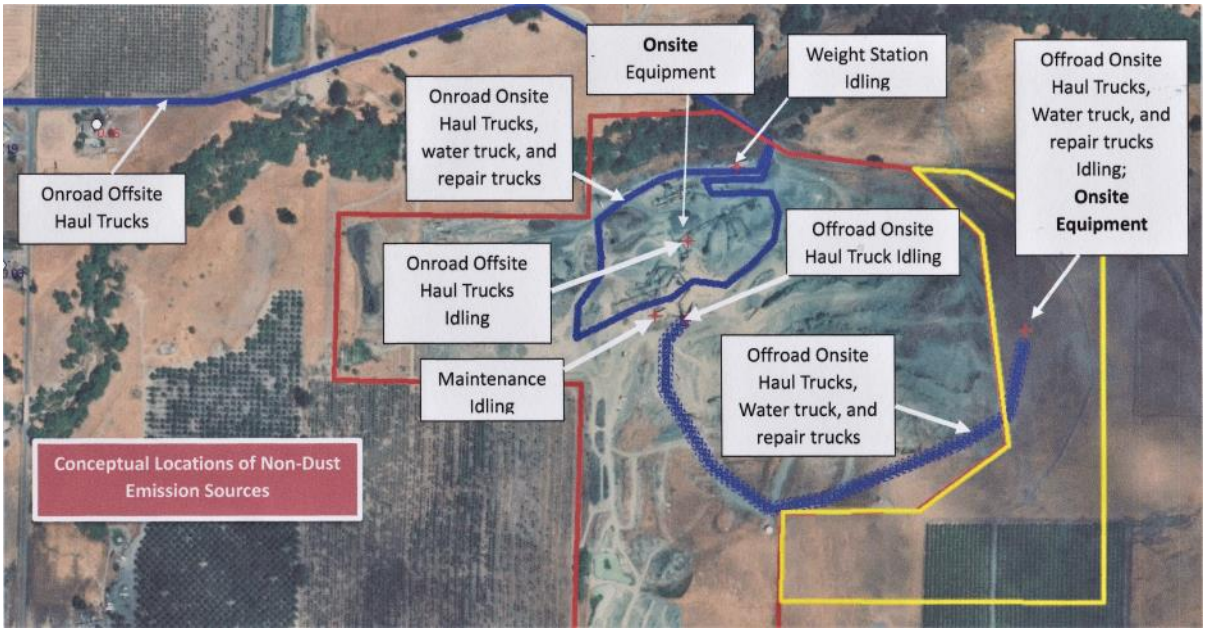
The assumptions for the inventory of on-site sources are described above and in more detail in Appendix A. The health risk analysis also includes emissions from on-road haul trucks traveling on Deer Creek Road within 0.25 mile of the site entrance consistent with SJVAPCD guidance.

The sources assessed for the criteria pollutant analysis include the following:

- Drilling and Blasting
- Off-Road Equipment (including off-road haul trucks)
- Water Trucks
- On-site Work Trucks
- Employee Commute
- On-road Haul Trucks
- Unpaved Road Dust
- Fugitive Dust from Truck Loading, Storage Piles, and Wind

The locations of the operational emission sources included in the criteria pollutant and HRA are provided in Figure 9.

Figure 9: Locations of On-site Operational Emission Sources



4.4.13 - Health Risk Assessment Methodology

An HRA is a guide that helps to determine whether current or future exposures to a toxic chemical or substance in the environment could affect the health of a population.

An HRA identifies the TACs that could affect public health, identifies the sources of the TAC emissions and quantifies the emissions, estimates where the emissions are transported by prevailing meteorological conditions, determines the extent and number of individuals exposed affected by the TACs, and the consequential health impacts due to the identified exposures.

The health risk assessment of TACs requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risks at each sensitive receptor location. The State of California Office of Environmental Health Hazards Assessment (OEHHA) has developed methods for conducting health risk assessments. As defined under the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588 [Chapter 1252, Statutes of 1987, California Health and Safety Code Section 44306]), "A health risk assessment means a detailed comprehensive analysis prepared pursuant to Section 44361 to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure."

This assessment focused on estimating the impacts from diesel particulate matter (DPM) emissions from project operation. The ARB has identified DPM as a carcinogenic substance. The ARB estimates that DPM comprises approximately 70 percent of the airborne cancer risk in California (ARB 2010).

Also contributing to non-cancer cancer hazards are emissions of total organic gases (TOG) that are comprised of several health-impacting components such as benzene, formaldehyde, and 1-3 butadiene. DPM is emitted by diesel trucks and off-road equipment operating at the project site. The emission rates for on-site on road diesel trucks are from EMFAC 2017. Per SJVAPCD guidance, the PM_{10} exhaust emissions are used as surrogate for DPM in the modeling.

The emissions from each source were geographically located in the dispersion model where they are expected to occur. The on-road haul trucks were modeled as line sources on the access routes from the site entrance and scales to the loading areas at the storage piles for the various sizes of material produced by the facility. The location of the storage piles and loading areas is not expected to change with the project expansion. The active mining areas were modeled at a location representing the average activity in the locations where mining is expected to occur on-site. As one area is completed, a new area will begin activity, so the locations will vary over time.

Cancer Risk Estimation Methodology

Cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer as a direct result of exposure to potential carcinogens over a specified exposure duration. The estimated risk is expressed as a probability. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF). A risk level of 20 in a million implies a likelihood that up to twenty people in a population of one million equally exposed people could contract cancer if exposed continuously (24 hours per day) to the levels of toxic air contaminants over a specified duration of time. This risk would be an excess cancer risk that is in addition to any environmental cancer risk borne by a person not exposed to these air toxics. The SJVAPCD has published a detailed methodology for estimating cancer risks (SJVAPCD 2015b) that were used in quantifying the project's cancer risks as described below.

The cancer risk from TACs is calculated by multiplying the average air concentration of TAC calculated using an air dispersion model at each receptor location and an inhalation exposure factor as expressed in Equation 1 below. The focus on estimating cancer risks is on exposures to DPM.

$$\text{Cancer Risk} = C_{DPM} \times \text{Inhalation Exposure Factor} \qquad \text{(EQ-1)}$$

Where:

Cancer Risk = Total individual excess cancer risk defined as the cancer risk a hypothetical individual faces if exposed to carcinogenic emissions from a particular source for specified exposure durations; this risk is defined as an excess risk because it is above and beyond the background cancer risk to the population; cancer risk is expressed in terms of risk per million exposed individuals.

C_{DPM} = Annual average DPM air concentration calculated from the air dispersion model in $\mu g/m^3$

Since inhalation is the most important exposure pathway to impact human health from airborne DPM, the inhalation exposure factor is defined as follows:

$$\text{Inhalation Exposure Factor} = CPF \times EF \times ED\ AAF/AT \qquad \text{(EQ-2)}$$

Where:

CPF = Inhalation cancer potency factor for DPM (1.1 mg/kg-day)
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AAF = set of age-specific adjustment factors that include age sensitivity factors (ASF), daily breathing rates (DBR), and time at Central Valley factors (TAH).
AT = Averaging time period over which exposure is averaged (25,550 days)

4.4.14 - Cancer Risk Age-Specific Adjustment Factors (AAF)

The SJVAPCD guidance incorporates early-in-life cancer risk adjustment factors that account for the increased sensitivity and susceptibility of infants and young children to exposures to airborne carcinogens as defined by the California Office of Environmental Health Hazards Assessment (OEHHA 2015). These adjustment factors include age-sensitivity weighting factors, age-specific daily breathing rates, and age-specific time-at-Central Valley factors. The SJVAPCD recommended values for the various cancer risk parameters shown in Equation 2 for sensitive/residential receptors are provided in Table 15.

Table 15: Exposure Assumptions for Cancer Risk During Operation

Age Bins	Exposure Frequency		Exposure Duration (years)	Age Sensitivity Factors (ASF)	Time at Central Valley Factor (TAH) (%)	Daily Breathing Rate[(1)] (DBR) (L/kg-day)
	Hours/day	Days/year				
Sensitive/Residential Receptor—Infant to Adult						
3rd Trimester	24	350	0.25	10	100	361
0 to 2 years	24	350	2	10	100	1,090
3 to 16 years	24	350	14	3	100	745
17 to 70 years	24	350	54	1	100	261
Source: SJVAPCD 2015b.						

The cancer risk methodology described above is embedded in the ARB HARP2 health risk model. The ARB HARP2 (Version 19044) health risk model was used to estimate cancer risks from the project operation. The HARP2 model makes use of the DPM concentration impact levels generated by the AERMOD model to calculate risks and hazards at receptor locations. Table 16 summarizes the assumptions used in the HARP2 model for calculating risks and hazards from the project's operational DPM emissions.

Table 16: HARP2 Model Assumptions

Feature	Assumption
DPM Concentrations	• Annual average concentrations from the AERMOD air dispersion model
Individual Cancer Risk Worker Cancer Risk	• 70-year exposure duration; OEHHA Derived Method; fraction of time at home = 1 for all age bins • 40-year exposure duration; OEHHA Derived Method
Chronic Non-Cancer Hazard	• OEHHA Derived Method
Pathways	• Inhalation, soil ingestion, dermal; mother's milk, home-gown produce
Deposition	• 0.02 meter/second
Source: see Appendix B	

Chronic Non-Cancer Hazards

Separate from cancer risk impacts, exposures to TACs can also cause chronic or long-term related non-cancer illnesses such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system, birth defects, or other adverse environmental effects. Risk characterization for non-cancer health hazards from TACs is expressed as a hazard index (HI). The HI is a ratio of the predicted concentration of a project's emissions to a concentration considered acceptable to public health professionals, termed the Reference Exposure Level (REL). This is a separate and distinct analysis from the analysis conducted for cancer risk. A significant risk is defined by the SJVAPCD as an HI of 1 or greater.

When evaluating chronic non-cancer effects due to TAC exposures, a hazard quotient (HQ) is established for each individual TAC as follows and for each target organ[1] affected by the individual TAC:

$$HQ_i = C_{air}/REL_i \qquad \text{(EQ-3)}$$

Where:

HQ_i = chronic hazard quotient for each TAC
C_{air} = Annual average concentration of each TAC ($\mu g/m^3$)
REL = Chronic Reference Exposure Level ($\mu g/m^3$)

[1] A target organ is a biological organ(s) most adversely affected by exposure to a chemical substance and includes the respiratory system, cardiovascular system, eyes, nervous system, hematological system, immune system, reproductive system, developmental system, skin, and endocrine system.

To evaluate the potential for adverse non-cancer health effects from simultaneous exposure to multiple TACs, the HQs for all TACs that affect the same target organ are summed yielding an HI as follows:

$$HI_{CNCHI} = \Sigma HQi \qquad \text{(EQ-4)}$$

Where:

HI_{CHI} = chronic hazard index for all TACs
ΣHQ_i = sum of all chronic hazard quotients for each individual TAC affecting the same target organ

Calculations of chronic health effects were based on annual average DPM concentrations from the operation of the project, since DPM is the most important TAC considered in this assessment. The California OEHHA has assigned a chronic non-cancer REL of 5 $\mu g/m^3$ for DPM. DPM has effects on the respiratory system, which accounts for essentially all of the potential chronic non-cancer hazards from DPM. Therefore, the only HI calculated was for the respiratory system.

4.4.15 - Greenhouse Gas Modeling Assumptions

The following assumptions are used for the GHG modeling:

Electricity

Electricity used by the project (for conveyors, rock crusher, lighting, etc.) would result in emissions from the power plants that would generate electricity distributed on the electrical power grid. Electricity emissions estimates are only used in the GHG analysis. CalEEMod was used to estimate these emissions from the project.

The applicant provided current electrical energy demands and the amount was increased proportionally by 87.5 percent to derive an estimated demand for processing the increase in throughput. Water used for the project would be pumped from an on-site well; therefore, any greenhouse gas emissions from water usage would be attributed to electricity.

Baseline Electricity Consumption

Electricity Emission Factor

The default CalEEMod emission factors for SCE are as follows:

- Carbon dioxide: 630.89 lbs/MWh
- Methane: 0.029 lb/MWh
- Nitrous oxide: 0.006 lb/MWh

By 2020, Southern California Edison (SCE), the electric provider for the project will be required to achieve the 33 percent renewable portfolio standard (RPS). SCE had 16 percent renewable energy in its portfolio in 2006 (CEC 2007). Therefore, to achieve a 33-percent reduction as required by California's Renewable Electricity Standard, 17 percent more renewable energy in the utility's portfolio is needed. In 2020, the utility will achieve 33 percent renewable energy, which would decrease the emissions associated with electricity by 17 percent.

- Carbon dioxide: 523.63 pounds/MWh
- Methane: 0.024 pounds/MWh
- Nitrous oxide: 0.004 pounds/MWh

Propane

No increase in propane is anticipated. There are no new structures being built that would require space heating or hot water. Propane used for industrial processes is not expected to increase with the project.

Water and Wastewater

GHG emissions are emitted from the use of electricity to pump water to the project and to treat wastewater. The project will use on-site wells and septic systems, so the electricity usage for the facility includes water pumping.

Solid Waste

GHG emissions would be generated from the decomposition of solid waste generated by employees of the project. CalEEMod was used to estimate the GHG emissions from this source. The CalEEMod default for the mix of landfill types is as follows:

- Landfill no gas capture: 6%
- Landfill capture gas flare: 94%
- Landfill capture gas energy recovery: 0%

Vegetation

The site is an operating mine site with no carbon sequestration occurring on-site. No landscaping or tree planting is expected. For this analysis, it was assumed that the loss and addition of carbon sequestration that are due to the project would be balanced; therefore, emissions due to carbon sequestration were not included.

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SECTION 5: AIR QUALITY IMPACT ANALYSIS

This section calculates the expected emissions from construction and operation of the project as a necessary requisite for assessing the regulatory significance of project emissions on a regional and localized level.

5.1—CEQA Guidelines

The CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on air quality, the type, level, and impact of emissions generated by the project must be evaluated.

The following air quality significance thresholds are contained in Appendix G of the CEQA Guidelines effective December 28, 2018. A significant impact would occur if the project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable national or state ambient air quality standard;

c) Expose sensitive receptors to substantial pollutant concentrations; or

d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people.

While the final determination of whether a project is significant is within the purview of the lead agency pursuant to Section 15064(b) of the CEQA Guidelines, the SJVAPCD recommends that its quantitative air pollution thresholds be used to determine the significance of project emissions. If the lead agency finds that the project has the potential to exceed these air pollution thresholds, the project should be considered to have significant air quality impacts. The applicable District thresholds and methodologies are contained under each impact statement below.

5.2—Impact Analysis

5.2.1 - Consistency with Air Quality Plan

Impact AIR-1: The project would not conflict with or obstruct implementation of the applicable air quality plan.

Impact Analysis

The CEQA Guidelines indicate that a significant impact would occur if the project would conflict with or obstruct implementation of the applicable air quality plan. The GAMAQI indicates that projects that do not exceed SJVAPCD quantitative thresholds would not conflict with or obstruct implementation of the applicable Air Quality Plan (AQP). An additional criterion regarding a project's implementation of AQP control measures was assessed to show specifically how the project helps to

implement the AQP. Therefore, this document proposes the following criteria for determining project consistency with the current AQPs:

1. Will the project result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQPs? This measure is determined by comparison to the regional and localized thresholds identified by the District for Regional and Local Air Pollutants.
2. Will the project comply with applicable control measures in the AQPs? The primary control measures applicable to development projects is Regulation VIII—Fugitive PM_{10} Prohibitions.

Contribution to Air Quality Violations

A measure for determining if the project is consistent with the air quality plans is if the project would not result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the air quality plans. Regional air quality impacts and attainment of standards are the result of the cumulative impacts of all emission sources within the air basin. Individual projects are generally not large enough to contribute measurably to an existing violation of air quality standards. Therefore, the cumulative impact of the project is based on its cumulative contribution. Because of the region's nonattainment status for ozone, $PM_{2.5}$, and PM_{10}—if project-generated emissions of either of the ozone precursor pollutants (ROG and NO_X), PM_{10}, or $PM_{2.5}$ would exceed the District's significance thresholds—then the project would be considered to contribute to violations of the applicable standards and conflict with the attainment plans.

As discussed in Impact AIR-2 below, emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ associated with the operation of the project would not exceed the District's significance thresholds. As shown in Impact AIR-3, the project would not result in CO hotspots that would violate CO standards. Therefore, the project would not contribute to air quality violations.

Compliance with Applicable Air Quality Plan Control Measures

The AQP contains a number of control measures, which are enforceable requirements through the adoption of rules and regulations. A detailed description of rules and regulations that apply to this project is provided in Section 2.2, Regulatory Setting. A brief description of rules and regulations that apply to this project is provided below.

Regulation VIII—Fugitive PM_{10} **Prohibitions** is a control measure that is one main strategies from the 2006 PM_{10} Plan for reducing the PM_{10} emissions that are part of fugitive dust. Unpaved roads, storage piles, and haul trucks are subject to provisions of the regulation.

Other control measures that may apply to the project are Rule 4641—Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operation that requires reductions in VOC emissions during paving if any paving will occur on the project site for mitigation purposes. The project complies with SJVAPCD permitting requirements under Rule 2201—New and Modified Stationary Source Review. The existing permits for the facility have emission limits matching the proposed operational throughput limits proposed for the project, so no changes to the permits are required.

The project would comply with all applicable SJVAPCD rules and regulations. Therefore, the project complies with this criterion and would not conflict with or obstruct implementation of the applicable air quality attainment plan.

The 2016 Plan for the 2008 8-Hour Ozone Standard was adopted in June 2016. The 2015 Plan for the 1997 $PM_{2.5}$ Standard was adopted in April 2015 and the 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard was adopted in September 2016. The plans assume growth would occur at rates projected by the State and regional population forecasts and would result in the continued need for rock and aggregate for construction projects. Therefore, the project complies with this criterion and would not conflict with or obstruct implementation of the applicable air quality attainment plan.

Conclusion

The project's emissions are less than significant for all criteria pollutants with mitigation and would not result in inconsistency with the AQP for this criterion. The project is consistent with the control measures and growth assumptions of the applicable AQP; therefore, the project is consistent with the AQP, and the impact would be less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.2 - Cumulative Criteria Pollutant Impacts

Impact AIR-2: **The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.**

Impact Analysis

To result in a less than significant impact, the following criteria must be true:

1. Regional analysis: emissions of nonattainment pollutants must be below the District's regional significance thresholds. This is an approach recommended by the District in its GAMAQI.
2. Summary of projections: the project must be consistent with current air quality attainment plans including control measures and regulations. This is an approach consistent with Section 15130(b) of the CEQA Guidelines.
3. Cumulative health impacts: the project must result in less than significant cumulative health effects from the nonattainment pollutants. This approach correlates the significance of the regional analysis with health effects, consistent with the court decision, *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-20.

Regional Emissions

Air pollutant emissions have both regional and localized effects. This analysis assesses the regional effects of the project's criteria pollutant emissions in comparison to SJVAPCD thresholds of significance for long-term operation of the project. Localized emissions from project operation are assessed under Impact AIR-3—Sensitive Receptors using concentration-based thresholds that determine if the project would result in a localized exceedance of any ambient air quality standards or would make a cumulatively considerable contribution to an existing exceedance.

The primary pollutants of concern during project operation are ROG, NO_X, PM_{10}, and $PM_{2.5}$. The SJVAPCD GAMAQI adopted in 2015 contains thresholds for CO, NO_X, ROG, SO_X, PM_{10}, and $PM_{2.5}$.

Ozone is a secondary pollutant that can be formed miles from the source of emissions, through reactions of ROG and NO_X emissions in the presence of sunlight. Therefore, ROG and NO_X are termed ozone precursors. The Air Basin often exceeds the state and national ozone standards. Therefore, if the project emits a substantial quantity of ozone precursors, the project may contribute to an exceedance of the ozone standard. The Air Basin also exceeds air quality standards for PM_{10}, and $PM_{2.5}$; therefore, substantial project emissions may contribute to an exceedance for these pollutants. The District's annual emission significance thresholds used for the project define the substantial contribution as follows:

- 100 tons per year CO
- 10 tons per year NO_X
- 10 tons per year ROG
- 27 tons per year SO_X
- 15 tons per year PM_{10}
- 15 tons per year $PM_{2.5}$

The project does not contain sources that would produce substantial quantities of SO_2 emissions during operation. Modeling conducted for the project show that SO_2 emissions are well below the SJVAPCD GAMAQI thresholds, as shown in the modeling results contained in Appendix A. No further analysis of SO_2 is required.

Operational Emissions

The project is the expansion of an existing mining operation to allow an increase in annual and daily throughput of aggregate products to meet expected increase in demand in the region. The project allows for increased rates of mining in the existing mine footprint and an expansion of the mining area onto an adjacent parcel. The current baseline throughput is approximately 800,000 tons per day of aggregate. The project requests an increase in throughput of 1,500,000 tons per year for an increase from baseline of 700,000 tons per year. The project increases the total throughput over the 50-year life of the project from 40 million tons to 75 million tons.

The solid rock material in active quarry areas is fractured using blasting and then excavated. The project uses mobile off-road equipment to excavate and transport the mined material from the extraction point to rock crushing equipment and storage piles. The crushed material is sorted and moved to storage piles with a conveyor system. No changes to the rock crushing equipment and conveyor system are required to handle the increased throughput. The applicant indicates that the increase in throughput can be handled with existing equipment operating for more hours per day and per year. No additional off-road equipment is required. The analysis is based on the actual equipment currently operating at the site with increases in operating hours proportional with the increase in throughput. The material in the storage piles is loaded into 25 ton on-road haul trucks for

transport to the ultimate user. The on-road haul trucks are not owned or operated by the mine operator. The increase in throughput requires an increase in truck trips based on truck capacity and the amount of throughput hauled.

Project emissions were assessed for baseline conditions, with project conditions, and for the incremental increase from the project. The emissions were first assessed for 2020 without mitigation to determine if a potentially significant impact would occur as summarized in Table 17. For assumptions in estimating the emissions, please refer to Section 4, Modeling Parameters and Assumptions and Appendix A.

As shown in Table 17, the emissions are above the SJVAPCD significance thresholds for NO_X prior to application of mitigation measures that would reduce project emissions, and, therefore, the project would result in a potentially significant impact.

Table 17: Operational Air Pollutant Emissions in 2020 (700,000 Tons/Year—Unmitigated)

Source	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Drilling and Blasting	0.00	2.82	11.11	0.00	0.00
Off-Road Equipment	1.53	4.96	5.88	0.12	0.12
Water Trucks	0.06	0.56	0.16	0.01	0.01
On-site Work Trucks	0.02	0.33	0.13	0.00	0.00
On-Road Haul Trucks	0.27	9.02	1.53	0.63	0.20
Employee Commute	0.00	0.00	0.02	0.06	0.01
Unpaved Road Dust (fugitive dust)	0.00	0.00	0.00	8.69	0.87
Dust (loading, wind, storage piles, unpaved roads)	0.00	0.00	0.00	0.70	0.18
Paved Road Dust Haul Trucks	0.00	0.00	0.00	0.00	0.00
Total Project Emissions	**1.87**	**17.70**	**18.83**	**10.81**	**1.56**
CEQA Significance threshold	10	10	100	15	15
Exceed threshold—significant impact?	No	Yes	No	No	No

Notes:
ROG = reactive organic gases NO_X = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Area source emissions include emissions from natural gas, landscape, and painting.
Source: CalEEMod output (Appendix A).

The project would exceed SJVAPCD thresholds for NO_X in 2020 at the maximum permitted throughput level. The increase in throughput is expected to occur gradually as additional customers for aggregate are obtained. Additional analysis was conducted to determine the throughput amount that could be accommodated without exceeding the thresholds. The increase in emissions is proportional to the increase in throughput, so the emissions that would be generated at different throughput levels were calculated with the modeling results from full operation at the proposed permit limit. At 400,000 tons per year, the project would slightly exceed the NOx threshold. Table 18

shows the emissions with an increase in throughput of 395,000 tons per year from the 800,000 tons per year baseline (1,200,000 tons per year) in 2020 and later years. The project could operate at an increase from baseline of 395,000 tons this level without producing significant regional air quality impacts.

Table 18: Operational Air Pollutant Emissions in 2020 (395,000 Tons/Year—Unmitigated)

Scenario	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Project Increase 400,000 tons/year	1.07	10.11	10.76	6.17	0.89
Project Increase 395,000 tons/year	1.05	9.99	10.62	6.70	0.96
CEQA Significance threshold	10	10	100	15	15
Exceed threshold—significant impact?	No	No	No	No	No

Notes:
ROG = reactive organic gases NO_X = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Area source emissions include emissions from natural gas, landscape, and painting.
Source: CalEEMod output (Appendix A).

Most mobile emission sources decline each year from compliance with mobile source regulations, so more throughput can be accommodated without exceeding the emission thresholds as time passes. The ARB Truck and Bus Regulation requires truck fleets to operate only 2010 and newer trucks by 2024, which results in substantial emission reductions. The benefits of this regulation are included in the CalEEMod model. The emissions in 2025 without mitigation were modeled with CalEEMod to determine the throughput that could be produced without exceeding the SJVAPCD thresholds. The results show that an increase of 500,000 tons per year above the 800,000 ton per year baseline (1,300,000 tons per year) would not exceed the thresholds in 2025. In other words, the project could add 100,000 tons of throughput each year through 2025 without exceeding the threshold. The results of the analysis for a 500,000-ton-per-year increase from baseline are provided in Table 19.

Table 19: Operational Air Pollutant Emissions in 2025 (500,000 Tons/Year—Unmitigated)

Scenario	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Project Increase 500,000 tons/year	1.26	9.64	13.23	7.70	1.10
CEQA Significance threshold	10	10	100	15	15
Exceed threshold—significant impact?	No	No	No	No	No

Notes:
ROG = reactive organic gases NO_X = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Area source emissions include emissions from natural gas, landscape, and painting.
Source: CalEEMod output (Appendix A).

If demand for material were to increase by more than 395,000 tons between 2020 and 2025, mitigation beyond compliance with regulations would be required. The ARB In-Use Off-Road Diesel-Fueled Fleet regulation requires fleets such as those operated by the Deer Creek Mine to reduce NO_X

emissions each year to meet fleet average emission targets. In addition, the regulation requires fleets to implement best available control technology (BACT) on 10 percent of the equipment until all equipment meets the requirement. BACT for most off-road equipment requires models that are EPA Tier 4-certified, with some exemptions for equipment age and low usage.

To operate at the maximum throughput increase of 700,000 tons per year (1,500,000 tons per year) requires accelerating the replacement of equipment with Tier 4 models beyond the replacement rates required by the regulation. Using a fleet consisting of all Tier 4-interim and Tier 4-final certified equipment in 2020 would allow throughput to increase by 500,000 tons per year from baseline (1,300,000 tons/year). Recognizing that replacing all non-Tier 4 equipment with Tier 4 all at once would incur substantial costs, the applicant could gradually change out the fleet beyond the amounts required by regulation but continue operating at the lower throughput level until the fleet changeout is complete. A mitigation measure has been included to provide the applicant with the flexibility to increase throughput and implement the early changeout of equipment or to delay the equipment changeout until a future date and maintain 395,000 ton per year increase from baseline or 1,195,000 tons per year from the facility.

Project emissions at the maximum increase in throughput in 2025 would exceed the threshold for NO_X and PM_{10} prior to the application of mitigation measures. The change of the off-road equipment to Tier 4 would reduce NO_X emissions to less than significant levels.

The project emissions with an increase of 700,000 tons per year (maximum throughput of 1,500,000 tons per year) in 2025 without mitigation is provided in Table 20. The emissions prior to applying mitigation measures exceed the SJVAPCD thresholds for NO_X and PM_{10}. CO emissions increased somewhat, due to the increasing throughput.

Table 20: Operational Air Pollutant Emissions in 2025 (700,000 Tons/Year—Unmitigated)

	Emissions (tons per year)				
Scenario	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Project Increase 700,000 tons/year	1.76	13.50	18.52	10.78	1.54
CEQA Significance threshold	10	10	100	15	15
Exceed threshold—significant impact?	No	Yes	No	No	No

Notes:
ROG = reactive organic gases NO_X = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Area source emissions include emissions from natural gas, landscape, and painting.
CO emissions are higher in this run because increases in blasting emissions offset decreases in equipment exhaust emissions, the decline of which is due to fleet turnover.
Source: CalEEMod output (Appendix A).

Project emissions including all Tier 4 off-road equipment are shown in Table 21. The emissions with an increase of 700,000 tons per year (1,500,000 tons per year) would result in less than significant impacts with the implementation of mitigation measures to reduce NO_X and PM_{10}.

Table 21: Operational Air Pollutant Emissions in 2025 (700,000 Tons/Year—Mitigated)

Scenario	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Project Increase 700,000 tons/year	0.44	9.80	17.70	8.19	1.42
CEQA Significance threshold	10	10	100	15	15
Exceed threshold—significant impact?	No	No	No	Yes	No

Notes:
ROG = reactive organic gases NO_X = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Area source emissions include emissions from natural gas, landscape, and painting.
Source: CalEEMod output (Appendix A).

Step 2: Plan Approach

In accordance with CEQA Guidelines 15130(b), this part of the analysis of cumulative impacts is based on a summary of projections analysis. This analysis considers the current CEQA Guidelines, which includes the amendments approved by the Natural Resources Agency, effective on December 28, 2018. Under the amended CEQA Guidelines, cumulative impacts may be analyzed using other plans that evaluate relevant cumulative effects. The air quality attainment plans describe and evaluate the future projected emissions sources in the Basin and set forth a strategy to meet both state and federal Clean Air Act planning requirements and federal ambient air quality standards. The District attainment plans are based on a summary of projections that accounts for projected growth throughout the Air Basin, and the controls needed to achieve ambient air quality standards. In accordance with CEQA Guidelines Section 15064, subdivision (h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously approved plan or mitigation program. Therefore, the plans are relevant plans for a CEQA cumulative impacts analysis. As discussed in Impact AIR-1, the project is consistent with the air quality attainment plans. Therefore, according to this criterion, this impact is less than significant.

The history and development of the SJVAPCD's current Ozone Attainment Plan is described in Section 2.4, Air Quality Plans. The 2007 8-Hour Ozone Plan contains measures to achieve reductions in emissions of ozone precursors, and sets plans towards attainment of ambient ozone standards by 2023. The 2012 $PM_{2.5}$ Plan and the 2015 $PM_{2.5}$ Plan for the 1997 $PM_{2.5}$ Standard require fewer NO_X reductions to attain the $PM_{2.5}$ standard than the Ozone Plan, so the Ozone Plan is considered the applicable plan for reductions of the ozone precursors NO_X and ROG. The 2012 $PM_{2.5}$ Plan requires reductions in directly emitted $PM_{2.5}$ from combustion sources, such as diesel engines and fireplaces, and from fugitive dust to attain the ambient standard and is the applicable plan for $PM_{2.5}$ emissions. $PM_{2.5}$ is also formed in secondary reactions in the atmosphere involving NO_X and ammonia to form nitrate particles. Reductions in NO_X required for ozone attainment are also sufficient for $PM_{2.5}$ attainment. As discussed in Impact AIR-1, the project is consistent with all applicable control measures in the air quality attainment plans. The project would comply with any District rules and regulations that may pertain to implementation of the AQPs. Therefore, impacts would be less than significant with regard to compliance with applicable rules and regulations.

This project does not exceed SJVAPCD thresholds; therefore, the project is considered less than significant for this criterion.

Project Health Impacts

In the 5th District Court of Appeal case *Sierra Club v. County of Fresno (Friant Ranch, L.P.)*, the Court found the project EIR deficient because it did not identify specific health related effects resulting from the estimated amount of pollutants generated by the project. The ruling stated that the EIR should give a "sense of the nature and magnitude of the 'health and safety problems' caused by a project's air pollution. The EIR should translate the emission numbers into adverse impacts or to understand why such translation is not possible at this time (and what limited translation is, in fact, possible)."

The standard measure of the severity of impact is the concentration of pollutant in the atmosphere compared to the ambient air quality standard for the pollutant for a specified period of time. The severity of the impact increases with the concentration and the amount of time that people are exposed to the pollutant. The change in health impacts with concentration is described in Table 3 and Table 4 using the EPA's Air Quality Index. The pollutants of concern in the Friant Ranch ruling were regional criteria pollutants ozone, and PM_{10}. It is important to note that the potential for localized impacts can be addressed through dispersion modeling. The SJVAPCD includes screening criteria that if exceeded would require dispersion modeling to determine if project emissions would result in a significant health impact. For this project, no significant localized health impacts would occur with application of mitigation measures. Regional pollutants require more complex modeling as described below.

Ozone concentrations are estimated using regional photochemical models because ozone formation is subject to temperature, inversion strength, sunlight, emissions transport over long distances, dispersion, and the regional nature of the precursor emissions. The emissions from individual projects are too small to produce a measurable change in ozone concentrations—it is the cumulative contribution of emissions from existing and new development that is accounted for in the photochemical model. Ozone concentrations vary widely throughout the day and year even with the same amount of daily emissions. The SJVAPCD indicated in an Amicus Brief on Friant Ranch that running the photochemical model with just Friant Ranch emissions (109.5 tons/year NO_X) is not likely to yield valid information given the relative scale involved. A copy of the SJVAPCD brief is included in Appendix C. The NO_X inventory for the San Joaquin Valley is 224 tons per day in 2019 or 81,760 tons per year. Friant Ranch would result in 0.13 percent increase in NO_X emissions. A project emitting at the SJVAPCD CEQA threshold of 10 tons per year would result in a 0.01 percent increase in NO_X emissions. Most project emissions are generated by motor vehicle travel distributed on regional roadways miles from the project site, and these emissions are not conducive to project-level modeling.

Emissions throughout the San Joaquin Valley are projected to markedly decline in the coming decade. The SJVAPCD 2016 Ozone Plan predicts NO_X emissions will decline to 103 tons per day by 2029 or 54 percent from 2019 levels through implementation of control measures included in the plan. This means that ozone health impacts to residents of the San Joaquin Valley will be lower than currently experienced and most areas of the San Joaquin Valley will have attained ozone air quality standards. The plan accounts for growth in population at rates projected by the State of California

for the San Joaquin Valley, so only cumulative projects that would exceed regional growth projections would potentially delay attainment and prolong the time and the number of people would experience health impacts. It is unlikely that anyone would experience greater impacts from regional emissions than currently occur. The federal transportation conformity regulation provides a means of ensuring growth in emissions does not exceed emission budgets for each County. Regional Transportation Plans and Regional Transportation Improvement Plans must provide a conformity analysis based on the latest planning assumptions that demonstrates that budgets will be not be exceeded. If budgets are exceeded, the San Joaquin Valley may be subject to Clean Air Act sanctions until the deficiency is addressed.

Particulate emission impacts can be localized and regional. Particulates can be directly emitted and can be formed in the atmosphere with chemical reactions. Small directly emitted particles such as diesel emissions and other combustion emissions can remain in the atmosphere for a long time and can be transported over long distances. Large particles such as fugitive dust tend to be deposited a short distance from where emitted but can also travel long distances during periods of high winds. Particulates can be washed out of the atmosphere by rain and deposited on surfaces. Secondary particulates formed in the atmosphere such as ammonium nitrate require NO_X and ammonia and require low inversion levels, and certain ranges of temperature and humidity to result in substantial concentrations. These complications make modeling project particulate emissions to determine concentration feasible only for directly emitted particles at receptor locations close to the project site. Regional particulate concentrations are modeled using a gridded inventory (emissions in tons/day are placed within a 4-kilometer, three-dimensional grid to spatially allocate the emissions geographically) and an atmospheric chemistry component is used to simulate the chemical reactions. The model uses relative reduction factors to determine the amount of reductions of each PM component will be needed to attain the air quality standards on the days with the conditions most favorable to high particulate concentrations. Only very large projects with emissions well in excess of SJVAPCD thresholds of significance would produce sufficient emissions to determine a project's individual contribution to the particulate concentration and health impact.

Step 3: Cumulative Health Impacts

The Air Basin is in nonattainment for ozone, PM_{10} (State only), and $PM_{2.5}$, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals (such as children, the elderly, and the infirm). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some sensitive individuals in the population would experience health effects that were described in Table 1. However, the health effects are a factor of the dose-response curve. Concentration of the pollutant in the air (dose), the length of time exposed, and the response of the individual are factors involved in the severity and nature of health impacts. If a significant health impact results from project emissions, it does not mean that 100 percent of the population would experience health effects. Table 2, Table 3, and Table 4 relate the pollutant concentration experienced by residents using air quality data for the nearest air monitoring station to the health impacts ascribed to those concentrations by the EPA Air Quality Index. This provides a more detailed look at the actual impacts currently experienced by residents near the project site.

Since the Basin is nonattainment for ozone, PM_{10}, and $PM_{2.5}$, it is considered to have an existing significant cumulative health impact without the project. When this occurs, the analysis considers

whether the project's contribution to the existing violation of air quality standards is cumulatively considerable. The SJVAPCD regional thresholds for NO_X, VOC, PM_{10}, or $PM_{2.5}$ are applied as cumulative contribution thresholds. Projects that exceed the regional thresholds would have a cumulatively considerable health impact. As shown in Table 17, the regional analysis of operational emissions indicates that the project would not exceed the District's significance thresholds with an increase in throughput of 395,000 tons per year in 2020 without mitigation. Table 18 shows that the project would not exceed the District's significance levels with a throughput of 500,000 tons per year in 2025 without mitigation. Table 21 shows that the project at the proposed maximum increase of 700,000 tons per year in 2025 would not exceed the District's thresholds with the application of Mitigation Measures AIR-2a, AIR-2b, and AIR-2c. Therefore, the project is consistent with the applicable Air Quality Plan.

The SJVAPCD Air Quality Attainment Plans predict that nonattainment pollutant emissions will continue to decline each year as regulations adopted to reduce these emissions are implemented, accounting for growth projected for the region. Therefore, the cumulative health impact will also decline even with the project's emission contribution.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

MM AIR-2a The following air pollution control measure shall be implemented to reduce emissions from off-road equipment:

- Idling times shall be minimized either by shutting equipment off when not in use or by reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485 of the California Code of Regulations). Clear signage shall be provided where clearly visible to equipment users.

MM AIR-2b Prior to increasing production beyond 395,000 tons per year of additional material, but less than 500,000 tons of material, the applicant shall ensure that the off-road equipment fleet meets EPA Tier 4 Interim or Tier 4 NO_X emissions standards. If the increase in production to 500,000 tons per year is deferred until 2025, compliance only with the ARB In-Use Off-Road Diesel-Fueled Fleet regulation is required to increase throughput by 500,000 tons per year (1,300,000 tons per year).

MM AIR-2c Prior to increasing production by 700,000 tons per year to the 1,500,000 tons per year permit limit in the year 2025 or later, the applicant shall ensure that the off-road equipment fleet meets EPA Tier 4 Interim or Tier 4 NO_X emissions standards.

Level of Significance After Mitigation

Less than significant impact.

5.2.3 - Sensitive Receptors

Impact AIR-3: The project may potentially expose sensitive receptors to substantial pollutant concentrations.

Impact Analysis

Sensitive Receptors

Those who are sensitive to air pollution include children, the elderly, and persons with pre-existing respiratory or cardiovascular illness. The District considers a sensitive receptor a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools.

Localized Pollutant Analysis

Emissions occurring at or near the project have the potential to create a localized impact, also referred to as an air pollutant hotspot. Localized emissions are considered significant if, when combined with background emissions, they would result in exceedance of any health-based air quality standard. The impact from localized pollutants is based on the impact to the nearest sensitive receptor; therefore, the analysis of localized pollutants is included under Impact AIR-3: Sensitive Receptors.

The SJVAPCD has established thresholds of significance for assessing potential air quality impacts and recommends that other agencies apply the adopted air quality significance thresholds when evaluating project-specific impacts on air quality within the SJVAB. However, it is recognized that the final determination of whether a project would have a significant effect on air quality is ultimately within the purview of the Lead Agency (CCR §15064(c)).

Air Quality-based Concentration Significance Thresholds

The SJVAB requires an assessment of a project's potential operational impacts on air quality if the project's operational emissions exceed a daily emission screening level of 100 pounds per day. The air quality assessment is achieved through the application of dispersion modeling wherein a project's impacts are compared to air quality-based concentration-based significance thresholds. A discussion of these thresholds is provided below.

Currently, the SJVAB is in attainment of federal and state ambient air quality standards for nitrogen dioxide (NO_2, a component of NO_X), sulfur dioxide (SO_2), and CO. For these pollutants, the significance thresholds are defined as the most restrictive ambient air quality standards. A significant impact would result if the change in the NO_2, SO_2, or CO pollutant air concentration impacts from the addition of the Project plus the background concentrations of these pollutants contributed by other local and regional emission sources exceeds the most restrictive ambient air quality standards.

The significance thresholds identified for PM_{10} and $PM_{2.5}$ require a different characterization. Although the SJVAB has not violated the national AAQS for PM_{10} in the past five years, it has violated the state standard for PM_{10} during the past several years. The SJVAB also exceeds both the national and state $PM_{2.5}$ air standards. The SJVAPCD has not, however, adopted air concentration significance thresholds for either PM_{10} or $PM_{2.5}$.

For pollutants where the air basin is classified as non-attainment under either the federal or state ambient air quality standards such as in the SJVAB for PM_{10} and $PM_{2.5}$, the significance approach accepted by local, state, and federal air agencies is to identify a significant impact level (SIL) based on a level of increase determined to be de minimis by the EPA. CEQA case law (Kings County Farm Bureau vs. the City of Hanford) established that the threshold in this case is not one additional molecule (or particle), which would require an EIR for any new development while the area was in non-attainment. The ruling stated, "The relevant question to be addressed in the EIR is not the relative amount of precursors emitted by the project when compared with preexisting emissions, but whether any additional amount of precursor emissions should be considered significant in light of the serious nature of the ozone problems in this air basin." Therefore, for purposes of this assessment, the EPA SILs contained in Title 40, Part 51, (51.165(b)(2)) of the Code of Federal Regulations (CFR 2011) were adopted to assess the significance of the change in particulate matter impacts from the Project. SILs are a screening tool used to determine whether a proposed source's emissions will have a significant impact on air quality. If an individual project's impacts are less than the corresponding SIL, its impact is said to be de minimis. SILs are also used to determine whether a proposed source's impact on an existing violation of a standard is significant enough that it is considered to "cause or contribute to" the violation.

The criteria pollutant significance thresholds applied in this assessment are summarized in Table 22. A significant impact would occur if the change in any pollutant exceeds the appropriate significance threshold.

Table 22: Air Quality Concentration-Based Risk Significance Thresholds

Pollutant	Air Concentration Threshold
Carbon Monoxide	20 ppm (1-hour) 9 ppm (8-hour)
Nitrogen Dioxide	0.18 ppm (1-hour) 0.03 ppm (annual)
PM_{10}	Exhaust: 24-hour: 5 $\mu g/m^3$ Exhaust: Annual:1 $\mu g/m^3$
	Fugitive: 24-hour: 10.4 $\mu g/m^3$ Fugitive: annual: 2.08 $\mu g/m^3$
$PM_{2.5}$	Exhaust: 24-hour: 1.2 $\mu g/m^3$ Exhaust: Annual: 0.2 $\mu g/m^3$
	Fugitive: 24-hour: 2.5 $\mu g/m^3$ Fugitive: annual: 0.63 $\mu g/m^3$
Source: GAMAQI 2015.	

Thresholds for Health Risks

In addition to the thresholds established above for criteria pollutants, the SJVAPCD has also defined health risk thresholds. These thresholds are represented as a cancer risk to the public and a non-cancer hazard from TACs. Cancer risk represents the probability (in terms of risk per million individuals) that an individual would contract cancer resulting from exposure to TACs continuously over a period of 70 years for sensitive receptors. Thus, an individual located in an area with a cancer

risk of one would experience a one chance in one million of contracting cancer over a 70-year period assuming that individual lives in that area continuously for the entire 70-year time period for a sensitive receptor.

TACs can also cause chronic (long-term) related non-cancer illnesses such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system, birth defects, or other adverse environmental effects. Risk characterization for non-cancer health hazards from TACs is expressed as a hazard index (HI). The HI is a ratio of the predicted concentration of the project's emissions to a concentration considered acceptable to public health professionals, termed the Reference Exposure Level (REL). The SJVAPCD has established the following health risk thresholds.

- Maximum Incremental Cancer Risk: 20 in 1 million at the nearest sensitive receptor or off-site worker; and
- Hazard Index (project increment) 1.0 or greater.

These thresholds are based on the SJVAPCD's Risk Management Policy for permitting stationary sources of TACs. The SJVAPCD Governing Board first adopted these thresholds and others for land use projects in 1995 in the GAMAQI. The threshold was later updated when revisions to the GAMAQI were adopted in 2015 implementing a new methodology for estimating cancer risks and incorporating a revised cancer risk significance threshold.

5.2.4 - Results of the Localized Criteria Pollutant Assessment

An emission inventory for on-site emission sources is required for modeling localized impacts. Emissions estimates were prepared for 2020 with a 400,000 ton per year increase in throughput (Table 23) and 2025 with the full 700,000-ton-per-year increase to reach the proposed 1,500,000 ton per year throughput limit (Table 24). Please note that the localized criteria pollutant emissions are less than significant at the 400,000-ton-per-year throughput level, so the regional emissions analyzed in Table 17 at 395,000 tons per year are the controlling factor for requiring mitigation. The largest sources of on-site emissions are off-road equipment and haul trucks. The localized criteria pollutant assessment also uses maximum daily emissions for several pollutants. Those emission results are included in Appendix B.

Table 23: On-site Operational Air Pollutant Emissions in 2020 (400,000 Tons/Year—Unmitigated)

Source	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Drilling and Blasting	0.000	1.611	6.347	0.0135	0.007
Off-Road Equipment	0.104	1.805	2.313	0.043	0.043
Water Trucks	0.033	0.317	0.094	0.007	0.005
On-site Work Trucks	0.010	0.193	0.074	0.002	0.002
On-Road Haul Trucks (on-site)	0.052	0.609	0.442	0.004	0.003

Table 23 (cont.): On-site Operational Air Pollutant Emissions in 2020 (400,000 Tons/Year—Unmitigated)

Source	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Off Road Haul Trucks	0.768	1.029	1.047	0.026	0.026
Employee Commute	0.000	0.000	0.000	0.000	0.000
Unpaved Road Dust (fugitive dust)	0.000	0.000	0.000	4.970	0.50
Dust (loading, wind, storage piles, unpaved roads)	0.000	0.000	0.000	0.387	0.15
Permitted Sources	0.000	0.000	0.000	0.31	0.31
Total Project Emissions	**0.966**	**5.563**	**10.317**	**5.76**	**1.046**

Notes:
ROG = reactive organic gases NO_X = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Area source emissions include emissions from natural gas, landscape, and painting.
Source: Appendix B: Criteria Pollutant Analysis and Health Risk Assessment .

Table 24: On-site Operational Air Pollutant Emissions in 2025 (700,000 Tons/Year—Mitigated)

Source	Emissions (tons per year)				
	ROG	NO_X	CO	PM_{10}	$PM_{2.5}$
Drilling and Blasting	0.000	2.818	11.108	0.024	0.004
Off-Road Equipment	0.197	2.283	7.538	0.011	0.011
Water Trucks	0.006	0.315	0.076	0.004	0.002
On-site Work Trucks	0.011	0.176	0.076	0.003	0.002
On-Road Haul Trucks (on-site)	0.056	0.874	0.837	0.003	0.001
Off Road Haul Trucks	0.169	0.600	1.679	0.004	0.004
Employee Commute	0.000	0.000	0.00	0.000	0.000
Unpaved Road Dust (fugitive dust)	0.000	0.000	0.00	5.570	0.560
Dust (loading, wind, storage piles, unpaved roads)	0.000	0.000	0.00	0.440	0.168
Permitted Sources	0.000	0.000	0.00	0.650	0.650
Total Project Emissions	**0.439**	**7.076**	**21.313**	**6.709**	**1.402**

Notes:
ROG = reactive organic gases NO_X = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Area source emissions include emissions from natural gas, landscape, and painting.
CO emissions are higher in this run because increases in blasting emissions offset decreases in equipment exhaust emissions, the decline of which is due to fleet turnover.
Source: Appendix B: Criteria Pollutant Analysis and Health Risk Assessment

Table 25 and Table 26 summarize the localized criteria pollutant air quality impact results for a 400,000 ton per year throughput increase in 2020 for CO and NO_2 and for PM_{10} and $PM_{2.5}$, respectively along with a comparison to the SJVAPCD's air concentration significance thresholds. The emission from the project would not exceed the SJVAPCD's annual emissions' significance thresholds for the 400,000 tons per year added throughput with compliance with Regulation VIII dust controls. As shown therein, the operation of the project at the 400,000 tons per year throughput would also not exceed the SJVAPVD's air concentration significance thresholds.

Table 25: Results of the Localized Criteria Pollutant Assessment for CO and NO_2: 400,000 Tons/Year (2020)

Pollutant	Averaging Time/Units	Background Air Quality	Project Impact	Background + Project Impact	Air Quality Significance Threshold	Exceeds Threshold?
CO	1 Hour/ppm	Not Monitored	0.036	0.36	20	No
	8 Hour/ppm	Not Monitored	0.006	0.006	9.0	No
NO_2	1 Hour/ppm	0.062	0.014	0.076	0.18 (State)	No
	1 Hour/ppm	0.056	0.006	0.062	0.10 (Federal)	No
	Annual/ppm	0.01	<0.001	0.001	0.03	No
Source: Appendix B: Criteria Pollutant Analysis and Health Risk Assessment						

Table 26: Results of the Localized Criteria Pollutant Assessment for PM_{10} and $PM_{2.5}$: 400,000 Tons/Year (2020)

Pollutant	Averaging Time/Units	Project Impact	Air Quality Significance Threshold	Exceeds Threshold?
PM_{10} Exhaust	24 Hour/ $\mu g/m^3$	0.06	5	No
	Annual/ $\mu g/m^3$	0.04	1	No
PM_{10} Dust	24-Hour/ $\mu g/m^3$	4.50	10.4	No
	Annual/ $\mu g/m^3$	1.53	2.06	No
$PM_{2.5}$ Exhaust	24-Hour/ $\mu g/m^3$	0.04	1.2	No
	Annual/ $\mu g/m^3$	0.01	0.2	No
$PM_{2.5}$ Dust	24 Hour/ $\mu g/m^3$	0.81	2.5	No
	Annual/ $\mu g/m^3$	0.22	0.63	No
Source: Appendix B: Criteria Pollutant Analysis and Health Risk Assessment Model Worksheets				

Table 27 and Table 28 summarize the localized criteria pollutant analysis for the full permitted increase of 700,000 tons per year by 2025. As noted therein, the operation of the project would not

exceed any of the SJVAPCD's air concentration-based significance thresholds with the application of mitigation measures to further reduce unpaved road dust. The project will be required to pave up to 0.20 mile of unpaved access road as measured from the site entrance at Deer Creek Road prior to reaching the maximum 700,000 ton per year throughput level. In addition, the project uses water to control fugitive dust on unpaved haul roads. The analysis assumes a 61 percent reduction in fugitive dust from watering three times per day during active haul operations.

Table 27: Results of the Localized Criteria Pollutant Assessment for CO and NO_2: 700,000 Tons/Year (2025)

Pollutant	Averaging Time/Units	Background Air Quality	Project Impact	Background + Project Impact	Air Quality Significance Threshold	Exceeds Threshold?
CO	1 Hour/ppm	Not Monitored	0.055	0.055	20	No
	8 Hour/ppm	Not Monitored	0.035	0.035	9.0	No
NO_2	1 Hour/ppm	0.062	0.013	0.075	0.18 (State)	No
	1 Hour/ppm	0.056	0.006	0.062	0.10 (Federal)	No
	Annual/ppm	0.01	<0.001	0.001	0.03	No
Source: Appendix B: Criteria Pollutant Analysis and Health Risk Assessment Model Worksheets.						

Table 28: Results of the Localized Criteria Pollutant Assessment for PM_{10} and $PM_{2.5}$: 700,000 Tons/Year (2025)

Pollutant	Averaging Time/Units	Project Impact	Air Quality Significance Threshold	Exceeds Threshold?
PM_{10} Exhaust	24 Hour/ $\mu g/m^3$	0.02	5	No
	Annual/ $\mu g/m^3$	0.01	1	No
PM_{10} Dust	24-Hour/ $\mu g/m^3$	6.39	10.4	No
	Annual/ $\mu g/m^3$	1.98	2.08	No
$PM_{2.5}$ Exhaust	24-Hour/ $\mu g/m^3$	0.01	1.2	No
	Annual/ $\mu g/m^3$	0.003	0.2	No
$PM_{2.5}$ Dust	24 Hour/ $\mu g/m^3$	1.18	2.5	No
	Annual/ $\mu g/m^3$	0.37	0.63	No
Source: Appendix B: Criteria Pollutant Analysis and Health Risk Assessment. Model Worksheets.				

5.2.5 - Results of the Health Risk Assessment—Operation

Table 29 summarizes the health risk impacts for Scenario 1 while Table 30 summarizes the health impacts for Scenario 2. As noted from Table 29 and Table 30, the project operations would not exceed the SJVAPCD's health risk significance thresholds under either scenario. The maximum health

impact was noted at an existing residence located approximately 0.16 miles north of the project along Deer Creek Drive.

Table 29: Estimated Maximum Health Risk Impacts: Scenario 1: 400,000 Tons/Year (2020)

Metric	Health Impact	Significance Threshold	Exceeds Threshold?
Cancer Risk	18.1 in one million	20 in one million	No
Chronic Non-Cancer Hazard Index	0.003	1.0	No
Source: Appendix B: Criteria Pollutant Analysis and Health Risk Assessment.			

Table 30: Estimated Maximum Health Risk Impacts: Scenario 2: 700,000 Tons/Year (2025)

Metric	Health Impact	Significance Threshold	Exceeds Threshold?
Cancer Risk	4.1 in one million	20 in one million	No
Chronic Non-Cancer Hazard Index	<0.001	1.0	No
Source: Appendix B: Criteria Pollutant Analysis and Health Risk Assessment.			

As noted from the results shown in Table 29 and Table 30, the project's cancer risks under either Scenario 1 or Scenario 2 would not exceed the SJVAPCD's cancer risk significance threshold.

Valley Fever

Valley fever, or coccidioidomycosis, is an infection caused by inhalation of the spores of the fungus, *Coccidioides immitis* (*C. immitis*). The spores live in soil and can live for an extended time in harsh environmental conditions. Activities or conditions that increase the amount of fugitive dust contribute to greater exposure, and they include dust storms, grading, and recreational off-road activities.

From January through December 2017, 7,466 new cases of Valley fever were reported to California Department of Public Health (CDPH), making 2017 the highest annual incidence reported in California since coccidioidomycosis became individually reportable in 1995 (CDPH 2018a). The San Joaquin Valley is considered an endemic area for Valley fever. The CDPH reported that Valley fever numbers in Tulare County increased to 275 confirmed cases in 2017, double the average of 123 cases for 2011–2015 and a 14.5 percent increase over the 240 confirmed cases in 2016 (CDPH 2018b).

The distribution of *C. immitis* within endemic areas is not uniform and growth sites are commonly small (a few tens of meters) and widely scattered. Known sites appear to have some ecological factors in common suggesting that certain physical, chemical, and biological conditions are more favorable for *C. immitis* growth. Avoidance, when possible, of sites favorable for the occurrence of *C. immitis* is a prudent risk management strategy. Listed below are ecologic factors and sites favorable for the occurrence of *C. immitis*:

1) Rodent burrows (often a favorable site for *C. immitis*, perhaps because temperatures are more moderate and humidity higher than on the ground surface)

2) Old (prehistoric) Indian campsites near fire pits
3) Areas with sparse vegetation and alkaline soils
4) Areas with high salinity soils
5) Areas adjacent to arroyos (where residual moisture may be available)
6) Packrat middens
7) Upper 30 centimeters of the soil horizon, especially in virgin undisturbed soils
8) Sandy, well-aerated soil with relatively high water-holding capacities

Sites within endemic areas less favorable for the occurrence of *C. immitis* include:

1) Cultivated fields
2) Heavily vegetated areas (e.g. grassy lawns)
3) Higher elevations (above 7,000 feet)
4) Areas where commercial fertilizers (e.g. ammonium sulfate) have been applied
5) Areas that are continually wet
6) Paved (asphalt or concrete) or oiled areas
7) Soils containing abundant microorganisms
8) Heavily urbanized areas where there is little undisturbed virgin soil (USGS 2000).

The project site is at the base on the foothills in rural Tulare County. The mining area itself is solid rock that would not provide suitable habitat for Valley fever spores. The new mine expansion area is situated on grassland and agricultural land. The grassland could harbor Valley fever spores, so removal of the topsoil prior to mining has the potential to disturb *C. immitis* habit.

The project will minimize the generation of fugitive dust during top soil removal by complying with the District's Regulation VIII. Therefore, compliance with this regulation would reduce Valley fever impacts to less than significant.

Naturally Occurring Asbestos

According to a map of areas where naturally occurring asbestos in California are likely to occur (U.S. Geological Survey 2011), there are no such areas in the project area. Therefore, development of the project is not anticipated to expose receptors to naturally occurring asbestos. Impacts would be less than significant.

Impact Summary

In summary, the project would not exceed SJVAPCD localized emission thresholds for any criteria pollutant with the inclusion of Mitigation Measures AIR-2a, AIR-2b, and AIR-2c. The project TAC emissions would not result in a significant increase in cancer risk or non-cancer risk with the inclusion of Mitigation Measures AIR-2a, 2b, and 2c. Fugitive unpaved dust emissions would exceed

SJVAPCD concentration-based thresholds without application of additional mitigation to reduce this impact. With paving of 0.2 mile of unpaved haul road and increasing watering to three times per day, this impact would be reduced to less than significant levels. The project would not result in a significant impact from Valley fever spores with compliance with SJVAPCD Regulation VIII during soil disturbing activity. The project is not in area known to have naturally occurring asbestos. Therefore, the project would not result in significant impacts to sensitive receptors.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Comply with Mitigation Measures AIR-2a, AIR-2b, and AIR-2c and the following:

MM AIR-3a Prior to reaching the maximum throughput increase of 700,000 tons per year or the 1,500,000 tons permit limit, the operator shall pave at least 0.20 mile of unpaved access road starting from the site entrance on Deer Creek Road.

MM AIR-3b Unpaved haul roads shall be controlled with the application of water as needed to reduce fugitive dust to less than 20 percent opacity. Water shall be applied three times per day to achieve a 61 percent control and the opacity limit.

Level of Significance After Mitigation

Less than significant impact.

5.2.6 - Objectionable Odors

Impact AIR-4: The project would not result in other emissions such as those leading to odors affecting a substantial number of people.

Impact Analysis

Thresholds of Significance

Odor impacts on residential areas and other sensitive receptors, such as hospitals, day-care centers, schools, etc. warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate, such as recreational facilities, worksites, and commercial areas.

Two situations create a potential for odor impact. The first occurs when a new odor source is located near an existing sensitive receptor. The second occurs when a new sensitive receptor locates near an existing source of odor. According to the *CBIA v. BAAQMD* ruling, impacts of existing sources of odors on the project are not subject to CEQA review. Therefore, the following analysis is provided for information only. The District has determined the common land use types that are known to produce odors in the Air Basin. These types are shown in Table 31.

Table 31: Screening Levels for Potential Odor Sources

Odor Generator	Screening Distance
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g., auto body shop)	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile
Source: SJVAPCD 2015a.	

According to the SJVAPCD GAMAQI, analysis of potential odor impacts should be conducted for the following two situations:

- **Generators:** projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and
- **Receivers:** residential or other sensitive receptor projects or other projects built for the intent of attracting people located near existing odor sources.

With the *CBIA v. BAAQMD* ruling, analysis of odor impacts on receivers is not required for CEQA compliance. Therefore, the following analysis is provided for information only.

Project Analysis

The increase in mining activity from the project does not include uses normally considered to cause odor impacts. The project site includes an existing asphalt batch that is a potential source of odors, but the plant will continue to operate at current levels and is not part of the expansion project.

During operation, the various diesel-powered vehicles and equipment in use on-site would create localized odors. These odors would be temporary and would not likely be noticeable for extended periods of time beyond the project's site boundaries. The potential for diesel odor impacts would therefore be less than significant.

Because the sources of odors for the project will dissipate with distance and should not reach an objectionable level at nearby residences and that no complaints have been registered, this impact is considered less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

SECTION 6: GREENHOUSE GAS IMPACT ANALYSIS

6.1—CEQA Guidelines

CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on GHGs, the type, level, and impact of emissions generated by the project must be evaluated.

The following GHG significance thresholds are contained in Appendix G of the CEQA Guidelines, which were amendments adopted into the Guidelines on March 18, 2010, pursuant to SB 97. A significant impact would occur if the project would:

(a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

(b) Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

6.2—Impact Analysis

6.2.1 - Greenhouse Gas Inventory

Impact GHG-1: The project would generate direct and indirect greenhouse gas emissions; however, these emissions would not result in a significant impact on the environment.

Impact Analysis

Threshold of Significance

Section 15064.4(b) of the CEQA Guidelines' 2018 amendments of the CEQA Guidelines' amendments for GHG emissions states that a lead agency may take into account the following three considerations in assessing the significance of impacts from GHG emissions.

- **Consideration #1**: The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.
- **Consideration #2**: Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- **Consideration #3**: The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project. In determining the significance of impacts, the lead agency may consider a project's consistency with the State's long-term

climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is not cumulatively considerable.

Tulare County adopted its Climate Action Plan (CAP) in 2012 and last revised the plan in 2018 to address SB 32 2030 targets and the ARB 2017 Scoping Plan. The CAP fulfills the requirements of consideration #3 as a local plan for the reduction or mitigation of greenhouse gas emissions. The CAP includes strategies to reduce GHG emissions through compliance with relevant General Plan policies and statewide GHG regulations. The 2018 CAP indicates that the County is on track to achieve the AB 32 2020 targets with the existing CAP measures and includes new targets for 2030. The CAP target for 2030 is a per capita rate of 4.18 tons per person in 2030. This would require an 8.6 percent reduction from business as usual in 2030 accounting for regulations currently in place.

The CAP focuses on residential and commercial development. CAP targets are not intended for Industrial process emissions since they are subject to Cap-and-Trade. Industrial projects with large numbers of employees and air-conditioned buildings would be subject to the CAP targets related to building energy efficiency and employee commuting. The project includes no new buildings and adds only three new employees. No mining industry-specific local measures are included in the CAP; however, the project will comply State regulations that apply to fuels used by project trucks and equipment, vehicle emission standards, and electricity consumed by the project that will reduce project emissions. For industrial projects, where the SJVAPCD is a Responsible Agency, projects are expected to implement Best Performance Standards included in the SJVAPCD Guidelines for Addressing Greenhouse Gas Emissions on the processes and stationary equipment that emit greenhouse gases to levels that meet or exceed state targets. The project requires no new air quality permits so the SJVAPCD is not a Responsible Agency in this case. Therefore, the analysis provides a quantitative analysis of its GHG emissions and assesses compliance with plans and regulations adopted to reduce or mitigate GHG emissions.

The State is on track to achieve the 2020 target with adopted regulations and has adopted the 2017 Scoping Plan Update on December 14, 2017 that provides the State's strategy to achieve the SB 32 2030 target of a 40 percent reduction in emissions compared to 1990 levels. The plan includes existing and new measures that when implemented are expected to achieve the SB 32 2030 target. The 2017 Scoping Plan achieves substantial reductions beyond 2020 through continued implementation of existing regulations. Other regulations will be adopted to implement recently enacted legislation including SB 350, which requires an increase in renewable energy from 33 percent to 50 percent and doubling the efficiency of existing buildings by 2030. The Legislature extended the Cap-and-Trade Program through 2030. Cap-and-Trade provides a mechanism to make up shortfalls in other strategies if they occur (ARB 2017c). In addition, the strategy relies on reductions achieved in implementing the ARB Short-Lived Climate Pollutant (SLCP) Reduction Strategy to reduce pollutants not previously controlled for climate change such as black carbon, methane, and hydrofluorocarbons (HFCs) (ARB 2017b).

Newhall Ranch

On November 30, 2015, the California Supreme Court issued its decision in *Newhall Ranch,* invalidating the GHG analysis for a large master planned residential development in Los Angeles County consisting of over 20,000 residential dwelling units and other uses. In particular, the Court upheld: (1) use of the statewide emissions reduction goal in AB 32 as a significance criterion (pp. 15–19), (2) use of the Scoping Plan's BAU model "as a comparative tool for evaluating efficiency and conservation efforts" of the Project (pp. 18–19), and (3) a comparison of the project's expected emissions to a BAU model rather than a baseline of pre-project conditions (pp. 15–19). The Court invalidated the GHG analysis on the grounds that the "administrative record discloses no substantial evidence that the Newhall Ranch's project-level reduction of 31 percent in comparison to [BAU] is consistent with achieving AB 32's statewide goal of a 29 percent reduction from [BAU]." The Court indicated that a lead agency may use a BAU comparison based on the Scoping Plan's methodology if it also substantiates the reduction a particular project must achieve to comply with statewide goals. The Court suggested a lead agency could examine the "data behind the Scoping Plan's business-as-usual model" to determine the necessary project-level reductions from new land use development at the proposed location (p. 25). A lead agency "might assess consistency with A.B. 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities."

The State's regulatory program implementing the 2008 Scoping Plan is now fully mature. All regulations envisioned in the Scoping Plan have been adopted by the responsible agencies and the effectiveness of those regulations has been estimated by the agencies during the adoption process and then are tracked to verify their effectiveness after implementation. The combined effect of this successful effort is that the State now projects that it will meet the 2020 target and achieve continued progress toward meeting post-2020 targets. Governor Brown, in the introduction to Executive Order B-30-15, states "California is on track to meet or exceed the current target of reducing greenhouse gas emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32)."

The Supreme Court was concerned that new development may need to do more than existing development to reduce greenhouse gases to demonstrate that it is doing its fair share of reductions. As will be shown below, new development does do more than existing development and, because of the nature of the sources of GHG emissions related to development, existing development is equally responsible for reducing emissions from the most important sources of emissions. It is important to note that most of the State's regulatory program applies to new and existing development.

The Scoping Plan reduction from BAU accounts for growth projected in the State and assumes that existing development would continue to emit GHGs at the same rate that occurred in the base year (2002-2004 average). The California Department of Finance (DOF) Report E-5 predicts that population growth in California from 2005 to 2020 will be 13.2 percent. This means that development that existed in 2005 will produce nearly 87 percent of the State's emissions in 2020. Conversely, new development is only responsible for about 13 percent of the emissions generated during this timeframe. If measures to reduce emissions from existing development were not available, new development could not provide sufficient reductions to reach the 2020 target even if their emissions were reduced to net zero. This continues to apply to the 2030 target. The DOF

forecasts California's population will grow by 8.1 percent between 2020 and 2030, so existing development will be responsible for 92 percent of the emissions that occur in 2030.

The State's regulatory program is able to target both new and existing development because the two most important strategies—motor vehicle fuel efficiency and emissions from electricity generation—obtain reductions equally from existing and new sources. This is because all vehicle operators use cleaner low carbon fuels and buy vehicles subject to the fuel efficiency regulations, and all building owners or operators purchase cleaner energy from the grid that is produced by increasing percentages of renewable fuels. This includes regulations on mobile sources such as the Pavley standards that apply to all vehicles purchased in California, the Low Carbon Fuel Standard (LCFS) that applies to all fuel used in California, and the Renewable Portfolio Standard and Renewable Energy Standard that apply to utilities providing electricity to all California homes and businesses. These regulations apply to the project's most important emission sources (on-road and off-road motor vehicles and energy use) and contribute toward meeting State GHG reduction targets. Measures targeted exclusively at new development include Title 24 Building Efficiency Standards, the CalGreen Building Code, and water conservation measures applicable to new construction.

The State's regulatory strategy relies on Cap-and-Trade Program to achieve most reductions from the industrial sector and it applies to 80 percent of the State's emission inventory. Cap-and-Trade applies to large sources such as electrical utilities, fuel producers and refiners, and cement manufacturers. The Cap-and-Trade Program also addresses emissions from fuels and from combustion of other fossil fuels not directly covered at large sources in the Program. The additional costs for fuel and electricity to comply with Cap-and-Trade are spread throughout the economy to users of the fuel and electricity such as the project.

As suggested by the Court, an analysis was prepared for this project that assesses "consistency with AB 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities." The analysis shows the extent to which the project complies with adopted regulations. At this point in time, no additional reductions are required from new development beyond regulations for the State to achieve its 2020 target. The recently adopted 2030 target will require a reduction from 431 $MTCO_2e$ to 260 $MTCO_2e$ or 40 percent from 1990 levels. After accounting for projected growth of approximately 0.8 percent per year an average decrease of 5.2 percent per year from the State GHG inventory will be required to achieve the target. The 2017 Scoping Plan Update includes a strategy for achieving the needed reductions, but does not identify an amount required specifically from new development. However, all GHG emission sources within development projects are subject to GHG regulations at some level.

The quantitative analysis prepared for the project assesses the extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting under Consideration # 1. The emissions generated at the existing baseline activity (800,000 tons per year) are compared with project at the proposed new permit limit (1,500,000 tons per year) to determine the increase in emissions from the project. The analysis assumed that the project would reach the new limit in the year 2025. The emissions in 2025 reflect compliance with regulations that apply to the project. The percent reduction for each regulation applicable to the project is provided separately to show the extent to which the project complies.

The Tulare County CAP includes a threshold approach that complies with Consideration #2 for commercial and residential development based on a percent reduction from BAU in 2030, but it is not applicable to mining and extraction industries. The CAP found that additional reductions from industrial sources beyond regulations would not be required to reach the 2030 target since those emissions were subject to regulation by other entities such as Cap-and-Trade, which applies to 80 percent of the State's GHG emission inventory. No buildings or new facilities are included in the project so no analysis of construction emissions is required.

Impact Analysis

Operation

Operational or long-term emissions occur over the life of the project. Sources of emissions include motor vehicles and trucks, energy usage, waste generation, and area sources.

Baseline and Project Operational Emissions

Operational emissions were modeled for baseline and for the increase in emissions at the new permitted throughput limit. The baseline emissions were modeled in 2020 and the increase in emissions from the project were modeled in 2025 using CalEEMod and spreadsheet calculations using the EMFAC mobile source emission model and EPA emission factors. CalEEMod assumes compliance with some, but not all, applicable rules and regulations regarding energy efficiency, vehicle fuel efficiency, renewable energy usage, and other GHG reduction policies, as described in the CalEEMod User's Guide (SCAQMD 2017). The reductions obtained from each regulation and the source of the reduction amount used in the analysis are described below.

Emissions Accounting for Applicable Regulations

The following regulations are incorporated into the CalEEMod emission factors:

- Pavley I and Pavley II (LEV III) motor vehicle emission standards
- ARB Medium and Heavy-Duty Vehicle Regulation

The following regulations have not been incorporated into the CalEEMod emission factors and require alternative methods to account for emission reductions provided by the regulations:

- Low Carbon Fuel Standard (LCFS)
- Renewable Portfolio Standard (RPS)

Pavley II/LEV III standards have been incorporated in the latest version of CalEEMod. ARB estimates a 3 percent reduction in 2020 and a 19 percent reduction from the vehicle categories subject to the regulation by 2030 (ARB 2010b and ARB 2013d).

The ARB GHG Regulation for Medium and Heavy-Duty Engines and Vehicles applies to trucks that will be accessing the project site. The benefits of the regulation were incorporated into CalEEMod 2016.3.2. The ARB estimates that this regulation will reduce GHG emissions from the affected vehicles by 7.2 percent (ARB 2013f).

The Low Carbon Fuel Standard (LCFS) is estimated to achieve a 10 percent reduction in emissions by 2020 and an 18 percent reduction by 2030 (ARB 2010). CalEEMod does not include credit for the LCFS, so the reduction is calculated off-model.

RPS reductions are estimated based on utility compliance with the standard. SCE reports to the CPUC on compliance with RPS mandates. The utilities are required by new legislation to increase the use of renewable energy sources to 50 percent.

Reductions in emissions from solid waste are based on the County achieving the CalRecycle 75 Percent Initiative by 2020 compared with a 50 percent baseline for 2005. Reductions are taken using the CalEEMod mitigation component.

Regulations applicable to project sources and the percent reduction anticipated from each source are shown in Table 32. The percentage reductions are only applied to the specific sources subject to the regulations. For example, the Pavley LEV Standards apply only to light duty cars and trucks.

Table 32: Reductions from Greenhouse Gas Regulations

Regulation	Project Applicability	Reduction Source	Percent Reduction in 2020 and 2030
Pavley Low Emission Vehicle Standards	Light-duty cars and trucks accessing the site are subject to the regulation.	CalEEMod defaults (Pavley I)	25.1[1]
		Adjusted GHG emission factor (Pavley II/LEV III) in CalEEMod.	3.0%/19.5%[2]
Truck and Bus Regulation	Heavy-duty trucks accessing the site for deliveries and services are subject to the regulation.	Adjusted GHG emission factors for the regulation in CalEEMod	7.2%[3]
Low Carbon Fuel Standard (LCFS)	Vehicles accessing the site will use fuel subject to the LCFS	CalEEMod defaults	10%/18%[1]
Renewable Portfolio Standard (RPS)	Electricity purchased for the utility will comply with RPS.	SCE forecast for RPS Reduction in 2020 and 2030	10.2%/23.3%
Solid waste	The solid waste service provider will need to provide programs to increase diversion and recycling to meet the 75 percent mandate.	CalEEMod mitigation component	25%[9]

Notes:
Regulations are described in Section 2.3 Regulatory Environment. The source of the percentage reductions from each measure are from the following sources:
1 Pavley 1 + Low Carbon Fuel Standard Postprocessor Version 1.0 User's Guide (ARB 2010b)
2 ARB Staff Report for LEV III Amendments (ARB 2013e)
3 ARB Staff Report for GHG Regulations for Medium and Heavy-Duty Engines and Vehicles (ARB 2013f)
4 Based on CalEEMod default SCE rate for 2020 and 2030 with RPS compliance
5 CalRecycle 75 Percent Initiative: Defining the Future (2016b)

Full assumptions and model outputs are provided in Appendix A and results of this analysis for the project operational emissions are presented in Table 33.

Table 33: Project Operational Greenhouse Gases

Source	Emissions ($MTCO_2e$ per year)		
	Baseline	Emissions With Project	Increase From Project
Off-road Equipment	1,124.09	2062.26	938.17
On-site Work Vehicles	84.35	216.07	99.74
On-road Haul Trucks	2,637.32	4,732.88	2,050.22
Employee Commute Trips	40.82	43.33	2.16
Electricity Use	744.33	1,394.09	651.13
Total	**4,630.90**	**8,448.62**	**3,741.42**

Notes:
$MTCO_2e$ = metric tons of carbon dioxide equivalents
Increase from Project Haul Truck Emissions reflect compliance with ARB Truck and Bus Regulation
Mobile sources reflect compliance with LCFS
Source: Modeling Results (Appendix A).

As shown in Table 33, the project would result in an increase in GHG emissions of 3,741 $MTCO_2e$ per year and the facility emissions would increase to 8,449 tons per year with the project. The modeling includes the benefits of regulations that reduce project emissions. The analysis presented above does not include new strategies proposed in the 2030 Scoping Plan Update. The update was adopted in December 2017. The update provides alternatives in terms of their likelihood of implementation and ranges of reduction from the strategies. Measures already authorized by legislation are highly likely to be implemented, while measures requiring new legislation are less likely to go forward. A new round of motor vehicle fuel efficiency standards beyond 2025 when LEV III standards are at their maximum reduction level is highly likely. Changing heavy-duty trucks and off-road equipment to alternative fuels face greater technological hurdles and are less likely to provide dramatic reductions by 2030.

The 2030 emission limit is 260 $MMTCO_2e$. The ARB estimates that the 2030 BAU (reference) Inventory will be 392 $MMTCO_2e$—a reduction of 132 $MMCO_2e$, including existing policies and programs but not including known commitments that are already underway. The 2030 Scoping Plan Update includes the estimated GHG emissions by sector compared with 1990 levels that is presented in Table 34. The proposed plan would achieve the bulk of the reductions from Electric Power, Industrial fuel combustion, and Transportation. Cap-and-Trade would provide between 10 to 20 percent of the required reductions depending on the amounts achieved by the other reduction measures.

Table 34: 2030 Scoping Plan Update Estimated Change in GHG Emissions by Sector

Scoping Plan Sector	Emissions ($MMTCO_2e$ per year)		
	1990	2030 Proposed Plan Ranges	Percent Change from 1990
Agriculture	26	24–25	-4 to -8
Residential and Commercial	44	38–40	-9 to -14

Table 34 (cont.): 2030 Scoping Plan Update Estimated Change in GHG Emissions by Sector

Scoping Plan Sector	Emissions ($MMTCO_2e$ per year)		
	1990	2030 Proposed Plan Ranges	Percent Change from 1990
Electric Power	108	42–62	-43 to -61
High GWP	3	8–11	167 to 267
Industrial	98	77–87	-11 to -21
Recycling and Waste	7	8–9	14 to 29
Transportation (including TCU)	152	103–111	-27 to -32
Net Sink	-7	TBD	TBD
Subtotal	**431**	**300–345**	**-20 to -30**
Cap-and-Trade Program	N/A	40–85	N/A
Total	**431**	**260**	**-40**

Notes:
GWP = Global Warming Potential; TCU = Transportation Communications and Utilities
Source: ARB 2030 Scoping Plan Update (ARB 2017).

Although 2030 Scoping Plan Update focuses on state agency actions necessary to achieve the 2030 GHG limit, the ARB considers local governments essential partners in achieving California's goals to reduce GHG emissions. The 2030 target will require an increase in the rate of emission reductions compared to what was needed to achieve the 2020 limit, and this will require action and collaboration at all levels, including local government action to complement and support State-level actions. For individual projects, the 2030 Scoping Plan Update suggests that all new land use development implement all feasible measures to reduce GHG emissions. The Scoping Plan does not define all feasible measures or attribute an amount of reductions required from new development beyond compliance with regulations; however, the CAP provides measures and reduction amounts that are feasible for commercial and residential development. No reduction amount or threshold was developed for industrial projects. Requiring the project operator to fully mitigate emissions without accounting for compliance with regulations would result in double mitigation, first by the regulated entity and then by the project operator purchasing electricity, fuel, and vehicles compliant with regulations in effect at the time of purchase and beyond that would violate constitutional nexus requirements.

In conclusion, based on progress achieved to date and the strong likelihood that the measures included in the 2017 Scoping Plan Update will be implemented, it is reasonable to conclude that the project is consistent with the 2017 Scoping Plan and will contribute a reasonable fair-share contribution to achieving the 2030 target. The fair share may very well be achieved through compliance with increasingly stringent State regulations that apply to energy production, fuels, and motor vehicles. As shown in Table 34, the state strategy relies on the Cap-and-Trade Program to make up any shortfalls that may occur from the other regulatory strategies. The costs of Cap-and-Trade emission reductions will ultimately be passed on to the consumers of fuels, electricity and

products produced by regulated industries, which includes the project and other purchasers of products and services. Therefore, the impact in terms of Considerations #1 and #2 would be less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

6.2.2 - Greenhouse Gas Reduction Plans

Impact GHG-2: The project would not conflict with any applicable plan, policy, or regulation of an agency adopted to reduce the emissions of greenhouse gases.

Impact Analysis

The following analysis assesses the project's compliance with Consideration #3 regarding consistency with adopted plans to reduce GHG emissions. The Tulare County CAP adopted in 2012 and last amended in December 2018 is the applicable plan to reduce GHG emissions in Tulare County. The CAP fulfills the streamlining provisions contained in the CEQA Guidelines amendments adopted for SB 97 and clarifications provided in the CEQA Guidelines amendments adopted on December 28 2018. However, the streamlining provisions are not structured to address mining and resource projects. The CAP relies on state regulations on fuels, motor vehicles, and electric utilities for industrial sources of GHG emissions.

The SJVAPCD has adopted a Climate Action Plan that requires best performance standards (BPS) for new industrial sources requiring air quality permits that would reduce emissions by at least 29 percent from BAU by 2020. The project does not propose any changes to its SJVAPCD permits; therefore, it is not subject to the SJVAPCD CAP.

The project reduces its GHG emissions through compliance with State regulations to contribute its fair share of GHG reductions toward meeting State GHG targets. Therefore, the project is assessed for its consistency with ARB's adopted Scoping Plans. This would be achieved with an assessment of the project's compliance with Scoping Plan measures contained in the 2008 Scoping Plan and the 2017 Scoping Plan Update.

AB 32 Scoping Plan

The California State Legislature adopted AB 32 in 2006. AB 32 focuses on reducing GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) to 1990 levels by the year 2020. Pursuant to the requirements in AB 32, the ARB adopted the Climate Change Scoping Plan (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. The Scoping Plan calls for an "ambitious but achievable" reduction in California's GHG emissions, cutting approximately 30 percent from BAU emission levels projected for 2020, or about

10 percent from 2008 levels. On a per-capita basis, that means reducing annual emissions of 14 tons of carbon dioxide for every man, woman, and child in California down to about 10 tons per person by 2020. As stated earlier, the ARB has updated its emission inventory forecasts and now estimates a reduction of 21.7 percent is required from BAU in 2020 to achieve AB 32 targets.

The Scoping Plan contains a variety of strategies to reduce the State's emissions. As shown in Table 35, the project is consistent with most of the strategies, while others are not applicable to the project. As discussed earlier, the 2017 Scoping Plan Update strategies primarily rely on increasing the stringency of existing regulations for which the project would continue to comply with and support through the project's design and implementation of the General Plan goals and policies.

Table 35: Project Consistency with Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
Transportation	California Cap-and-Trade Program Linked to Western Climate Initiative	Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanism October 20, 2015 (CCR 95800)	**Consistent.** The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers. However, the regulation indirectly affects people who use the products and services produced by these industrial sources when increased costs of products or services (such as electricity and fuel) are transferred to the consumers. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period.
	California Light-Duty Vehicle Greenhouse Gas Standards	Pavley I 2005 Regulations to Control GHG Emissions from Motor Vehicles 2012 LEV III Amendments to the California Greenhouse Gas and Criteria Pollutant Exhaust and Evaporative Emission Standards	**Consistent**. This measure applies to all new vehicles starting with model year 2012. The project would not conflict with its implementation as it would apply to all new passenger vehicles purchased in California. Passenger vehicles model year 2012 and later associated with construction and operation of the project would be required to comply with the Pavley emissions standards.
	Low Carbon Fuel Standard.	2009 readopted in 2015. Regulations to Achieve Greenhouse Gas Emission Reductions Subarticle 7. Low Carbon Fuel Standard CCR 95480	**Consistent.** This measure applies to transportation fuels utilized by vehicles in California. The project would not conflict with implementation of this measure. Motor vehicles associated with construction and operation of the project would utilize low-carbon transportation fuels as required under this measure.

Table 35 (cont.): Project Consistency with Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
	Regional Transportation-Related Greenhouse Gas Targets.	SB 375. Cal. Public Resources Code §§ 21155, 21155.1, 21155.2, 21159.28	**Consistent**. The project will provide a small increase in employment in the region that is consistent with the growth projections in the 2014 RTC/SCS. The project is not within an SCS priority area and so is not subject to requirements applicable to those areas.
	Goods Movement	Goods Movement Action Plan January 2007.	**Not applicable**. The project does not propose any changes to maritime, rail, or intermodal facilities or forms of transportation.
	Medium/Heavy-Duty Vehicles	2010 Amendments to the Truck and Bus Regulation, the Drayage Truck Regulation and the Tractor-Trailer Greenhouse Gas Regulation	**Consistent**. This measure applies to medium- and heavy-duty vehicles that operate in the State. The project would not conflict with implementation of this measure. Medium- and heavy-duty vehicles associated with operation of the project would be required to comply with the requirements of this regulation.
	High Speed Rail	Funded under SB 862	**Not applicable**. This is a statewide measure that cannot be implemented by a project applicant or lead agency.
Electricity and Natural Gas	Energy Efficiency	Title 20 Appliance Efficiency Regulation	**Not applicable.** The project would not construct buildings subject to energy efficiency regulations.
		Title 24 Part 6 Energy Efficiency Standards for Residential and Non-Residential Building	
		Title 24 Part 11 California Green Building Code Standards	
	Renewable Portfolio Standard/Renewable Electricity Standard.	2010 Regulation to Implement the Renewable Electricity Standard (33% 2020)	**Consistent**. The project would purchase power from SCE that is required to comply with RPS and future mandates of SB 350.
		SB 350 Clean Energy and Pollution Reduction Act of 2015 (50% 2030)	
	Million Solar Roofs Program	Tax incentive program	**Not applicable.** This project is a mining operation and has no roof space suitable for solar panels.

Table 35 (cont.): Project Consistency with Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementing Regulations	Project Consistency
Water	Water	Title 24 Part 11 California Green Building Code Standards	**Not Applicable.** No new structures will be constructed and the mining operation is not subject to the California Green Building Standards Code standards or MWELO requirements.
		SBX 7-7—The Water Conservation Act of 2009	
		Model Water Efficient Landscape Ordinance [MWELO]	
Green Buildings	Green Building Strategy	Title 24 Part 11 California Green Building Code Standards	**Not applicable.** The project will not construct buildings subject to the CalGreen Code.
Industry	Industrial Emissions	2010 ARB Mandatory Reporting Regulation	**Consistent.** The project is an industrial land use and would be required to report if it exceeds the threshold for reporting.
Recycling and Waste Management	Recycling and Waste	Title 24 Part 11 California Green Building Code Standards	**Consistent.** No structures subject to CalGreen Code will be constructed. An existing office trailer space will accommodate the increase of 3 new employees. The project would utilize County of Tulare waste hauling services that are required to provide recycling services. The County has consistently exceeded its state recycling mandates.
		AB 341 Statewide 75 Percent Diversion Goal	
Forests	Sustainable Forests	Cap-and-Trade Offset Projects	**Not applicable.** No forested lands exist on-site.
High Global Warming Potential	High Global Warming Potential Gases	ARB Refrigerant Management Program CCR 95380	**Not applicable**. The regulations are applicable to refrigerants used by large air conditioning systems and large commercial and industrial refrigerators and cold storage system. The project includes no large systems subject to the refrigerant management regulations adopted by ARB.
Agriculture	Agriculture	Cap-and-Trade Offset Projects for Livestock and Rice Cultivation	**Not Applicable**. The project site is a mining operation. No grazing, feedlot, or other agricultural activities that generate manure occur currently exist on-site or are proposed to be implemented by the project.
Source of ARB Scoping Plan Reduction Measures: California Air Resources Board 2008.			

In summary, the project is consistent with the applicable strategies of the 2008 Scoping Plan and contributes to their implementation in terms of compliance with regulations related to motor vehicles, fuels, and electricity used by the project. The impact would be less than significant.

Consistency with California's Post-2020 Targets

The State's executive branch adopted several Executive Orders related to GHG emissions. Executive Orders S-3-05 and B-30-15 are two examples. Executive Order S-3-05 sets goals to reduce emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. The goal of Executive Order S-3-05 to reduce GHG emissions to 1990 levels by 2020 was codified by AB 32. The project, as analyzed above, is consistent with AB 32. Therefore, the project does not conflict with this component of Executive Order S-3-05. Executive Order B-30-15 establishes an interim goal to reduce GHG emissions to 40 percent below 1990 levels by 2030.

The 2030 goal was recently codified under SB 32 and is now addressed by the 2017 Scoping Plan Update. The new plan provides a strategy that is capable of reaching the SB 32 target if the measures included in the plan are implemented and achieve reductions within the ranges expected. Under the Scoping Plan Update, local government plays a supporting role through its land use authority and control over local transportation infrastructure.

The Tulare CAP includes a strategy for achieving its fair share of development related emissions from commercial and residential projects for the 2030 target, but does not include a threshold approach for mining projects and other industrial projects whose emissions are caused by processes that produce materials and products. Therefore, the discussion under "Consistency with SB 32" below addresses the consistency of the proposed project with SB 32, which provides the statutory underpinning of the 2017 Scoping Plan.

The Executive Order S-3-05 2050 target has not been codified by legislation. Studies have shown that, in order to meet the 2050 target, aggressive pursuit of technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, will be required. Because of the technological shifts required and the unknown parameters of the regulatory framework in 2050, quantitatively analyzing the project's impacts further relative to the 2050 goal is speculative for purposes of CEQA (ARB 2014b).

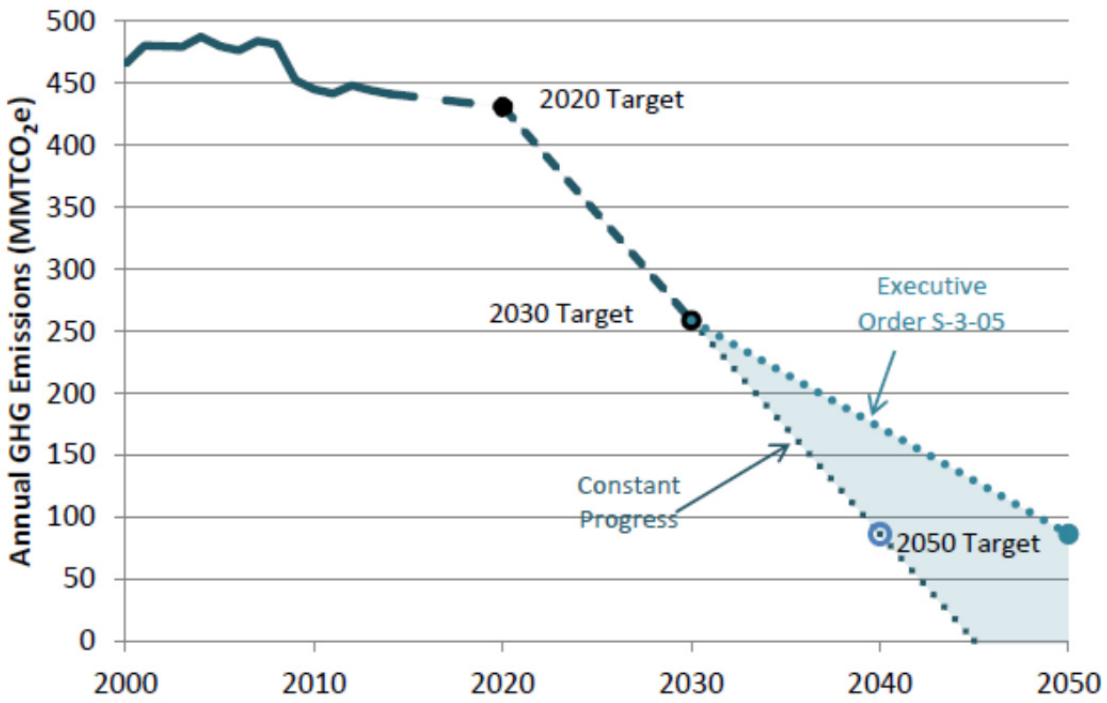
The ARB recognizes that AB 32 establishes an emissions reduction trajectory that will allow California to achieve the more stringent 2050 target: "These [greenhouse gas emission reduction] measures also put the State on a path to meet the long-term 2050 goal of reducing California's GHG emissions to 80 percent below 1990 levels. This trajectory is consistent with the reductions that are needed globally to stabilize the climate." In addition, ARB's First Update "lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050," and many of the emission reduction strategies recommended by ARB would serve to reduce the proposed project's post-2020 emissions level to the extent applicable by law:

- **Energy Sector:** Continued improvements in California's appliance and building energy efficiency programs and initiatives, such as the State's zero net energy building goals, would serve to reduce the proposed project's emissions level. Additionally, further additions to California's renewable resource portfolio would favorably influence the project's emissions level.

- **Transportation Sector:** Anticipated deployment of improved vehicle efficiency, zero emission technologies, lower carbon fuels, and improvement of existing transportation systems all will serve to reduce the project's emissions level.
- **Water Sector:** The project's emissions level will be reduced as a result of further desired enhancements to water conservation technologies.
- **Waste Management Sector:** Plans to further improve recycling, reuse and reduction of solid waste will beneficially reduce the project's emissions level.

For the reasons described above, the project's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the 2030 and 2050 targets. The trajectory required to achieve the post-2020 targets is shown in Figure 10.

Figure 10: California's Path to Achieving the 2050 Target



Source: ARB 2017 Scoping Plan Update (ARB 2017).

In his January 2015 inaugural address, Governor Brown expressed a commitment to achieve "three ambitious goals" that he would like to see accomplished by 2030 to reduce the State's GHG emissions:

- Increasing the State's Renewable Portfolio Standard from 33 percent in 2020 to 50 percent in 2030;
- Cutting the petroleum use in cars and trucks in half; and
- Doubling the efficiency of existing buildings and making heating fuels cleaner.

Regarding goals for 2050 under Executive Order S-3-05, it is not possible at this time to quantify the emissions savings from future regulatory measures, as they have not yet been developed; nevertheless, it can be anticipated that operation of the project would comply with applicable measures enacted by state lawmakers to achieve an 80 percent reduction below 1990 levels by 2050.

Consistency with SB 32

The 2017 Climate Change Scoping Plan Update (2017 Scoping Plan) includes the strategy that the State intends to pursue to achieve the 2030 targets of Executive Order S-3-05 and SB 32. The 2017 Scoping Plan includes the following summary of its overall strategy for reaching the 2030 target:

- SB 350
  - Achieve 50 percent Renewables Portfolio Standard (RPS) by 2030.
  - Doubling of energy efficiency savings by 2030.
- Low Carbon Fuel Standard (LCFS)
  - Increased stringency (reducing carbon intensity 18 percent by 2030, up from 10 percent in 2020).
- Mobile Source Strategy (Cleaner Technology and Fuels Scenario)
  - Maintaining existing GHG standards for light- and heavy-duty vehicles.
  - Put 4.2 million zero-emission vehicles (ZEVs) on the roads.
  - Increase ZEV buses, delivery and other trucks.
- Sustainable Freight Action Plan
  - Improve freight system efficiency.
  - Maximize use of near-zero emission vehicles and equipment powered by renewable energy.
  - Deploy over 100,000 zero-emission trucks and equipment by 2030.
- Short-Lived Climate Pollutant (SLCP) Reduction Strategy
  - Reduce emissions of methane and hydrofluorocarbons 40 percent below 2013 levels by 2030.
  - Reduce emissions of black carbon 50 percent below 2013 levels by 2030.
- SB 375 Sustainable Communities Strategies
  - Increased stringency of 2035 targets.
- Post-2020 Cap-and-Trade Program
  - Declining caps, continued linkage with Québec, and linkage to Ontario, Canada.
  - ARB will look for opportunities to strengthen the program to support more air quality co-benefits, including specific program design elements. In Fall 2016, ARB staff described potential future amendments including reducing the offset usage limit, redesigning the allocation strategy to reduce free allocation to support increased technology and energy investment at covered entities and reducing allocation if the covered entity increases criteria or toxics emissions over some baseline.
- By 2018, develop Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Table 36 provides an analysis of the project's consistency with the 2017 Scoping Plan Update measures.

Table 36: Consistency with SB 32 2017 Scoping Plan Update

Scoping Plan Measure	Project Consistency
SB 350 50% Renewable Mandate. Utilities subject to the legislation will be required to increase their renewable energy mix from 33% in 2020 to 50% in 2030.	**Consistent**: The project will purchase electricity from a utility subject to the SB 350 Renewable Mandate.
SB 350 Double Building Energy Efficiency by 2030. This is equivalent to a 20 percent reduction from 2014 building energy usage compared to current projected 2030 levels	**Not Applicable**. This measure applies to existing buildings. The project does not include new structures.
Low Carbon Fuel Standard. This measure requires fuel providers to meet an 18 percent reduction in carbon content by 2030.	**Consistent**. Vehicles accessing the project site will use fuel containing lower carbon content as the fuel standard is implemented.
Mobile Source Strategy (Cleaner Technology and Fuels Scenario) Vehicle manufacturers will be required to meet existing regulations mandated by the LEV III and Heavy-Duty Vehicle programs. The strategy includes a goal of having 4.2 million ZEVs on the road by 2030 and increasing numbers of ZEV trucks and buses.	**Consistent**. The project will purchase new work trucks when replacement is required and employees can be expected to purchase increasing numbers of more fuel-efficient and zero emission cars and trucks each year.
Sustainable Freight Action Plan The plan's target is to improve freight system efficiency 25 percent by increasing the value of goods and services produced from the freight sector, relative to the amount of carbon that it produces by 2030. This would be achieved by deploying over 100,000 freight vehicles and equipment capable of zero emission operation and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.	**Not Applicable**. The measure applies to owners and operators of trucks and freight operations. The project does operate a haul truck fleet to transport the aggregate. The haul trucks that access the site must be capable of handling heavy loads that are currently not feasible with zero emission technology. However, during the 50-year life of the mine, ZEV haul trucks are possible.
Short-Lived Climate Pollutant (SLCP) Reduction Strategy. The strategy requires the reduction of SLCPs by 40 percent from 2013 levels by 2030 and the reduction of black carbon by 50 percent from 2013 levels by 2030.	**Not Applicable**. The project does not include sources that produce significant quantities of methane or black carbon. Diesel haul trucks accessing the site will achieve significant reductions in $PM_{2.5}$ with adopted regulations that will reduce this source of black carbon.
SB 375 Sustainable Communities Strategies. Requires Regional Transportation Plans to include a sustainable communities strategy for reduction of per capita vehicle miles traveled.	**Not Applicable**. The project is not within an SCS priority area and so is not subject to requirements applicable to those areas. Only three employees will added with the expansion. .

Table 36 (cont.): Consistency with SB 32 2017 Scoping Plan Update

Scoping Plan Measure	Project Consistency
Post-2020 Cap-and-Trade Program. The Post 2020 Cap-and-Trade Program continues the existing program for another 10 years. The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers.	**Consistent.** The post-2020 Cap-and-Trade Program indirectly affects people who use the products and services produced by the regulated industrial sources when increased costs of products or services (such as electricity and fuel) are transferred to the consumers. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the program's first compliance period.
Natural and Working Lands Action Plan. The ARB is working in coordination with several other agencies at the federal, state, and local levels, stakeholders, and with the public, to develop measures as outlined in the Scoping Plan Update and the governor's Executive Order B-30-15 to reduce GHG emissions and to cultivate net carbon sequestration potential for California's natural and working land.	**Not Applicable**. The project is a mining operation that is not suitable site for sequestration.
Source: ARB 2017c—2017 Scoping Plan Update.	

Regarding goals for 2050 under Executive Order S-3-05, at this time it is not possible to quantify the emissions savings from future regulatory measures, as they have not yet been developed; nevertheless, it can be anticipated that operation of the project would comply with whatever measures are enacted that state lawmakers decide would lead to an 80 percent reduction below 1990 levels by 2050. In its 2008 Scoping Plan, ARB acknowledged that the "measures needed to meet the 2050 are too far in the future to define in detail." In the First Scoping Plan Update; however, ARB generally described the type of activities required to achieve the 2050 target: "energy demand reduction through efficiency and activity changes; large scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately." The 2017 Scoping Plan provides an intermediate target that is intended to achieve reasonable progress toward the 2050 target.

Accordingly, taking into account the proposed project's emissions, consistency with Scoping Plan measures, and the progress being made by the State towards reducing emissions in key sectors such as transportation, industry, and electricity, the project would further the State's goals of reducing

GHG emissions to 1990 levels by 2020, a 40 percent reduction from 1990 levels by 2030, and an 80 percent reduction below 1990 levels by 2050, and would not obstruct their attainment.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

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Appendix A: Modeling Assumptions and Results

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Appendix A: Modeling Assumptions

Deer Creek Mine Expansion

	Existing Site	Expansion
Site Acreage		20

	Existing Site Limit	Increase w/Expansion	Total
Annual Production (tons/year)	1,000,000	500,000	1,500,000
Truck Trips Max Daily (NOP) 2-way	376	224	600
Truck Loads Max Daily	188	112	300
Max Daily Throughput 25 tons/Truck	4,700	2,800	7,500
Truck Trips Max Annual	43,200	17,700	60,000
Total Rock Production (tons)	40,000,000	35,000,000	75,000,000
Employees	27	3	30
Operating Days Per Year	225		

	Baseline (Tons)
Current Baseline Operation Throughput	800,000

	Baseline	Increase	New Limit
Expanded Operation Throughput	800,000	700,000	1,500,000
Average Daily Throughput (tons/day)	3,556	3,111	6,667
Truck Capacity (Tons)	25	25	25
Baseline Loads/Year	32,000	28,000	60,000
Truck Trip Length Average (miles)	25		
Daily Truck Loads	142	124	267
Average Daily Truck Trips	**284**	**249**	**533**

	Existing Site Limit	Increase w/Expansion	New Limit
Max Daily Trips	376	224	600

Modeling Runs

Operations at existing and new limit with current equipment in 2020 with 2020 haul truck emissions from CalEEMod

Operation at existing and new limit with current equipment and aggregated truck fleet for 2025 assuming equipment turnover rates in CalEEMod/EMFAC

Determine emissions at incremental throughput levels based on fact that emissions are proportional to throughput

Permitted Equipment Emissions

Permit	PM10 dust (lbs/day)	PM2.5 dust (lbs/day)	PM10 dust (tons/year)	PM2.5 dust (tons/year)	Throughput
S-4136-3-6	66.70	12.34	7.50	1.39	1,500,000
Baseline Ops	35.57	6.58	4.00	0.74	800,000
Projected Increase	31.13	5.76	3.50	0.65	700,000

Emissions based on annual throughput of 1.5 million tons/year

- Source of PM2.5 dust: 18.5 percent of PM10 emissions, according to the values for controlled tertiary crushing in Table 11.19.2-1 from U.S. Environmental Protection Agency 2004. AP-42 Section 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing. Website: www.epa.gov/ttnchie1/ap42/ch11/final/c11s1902.pdf. Accessed October 5, 2012.
- Source of PM2.5 exhaust: CalEEMod manual (Appendix D, table 3.5) indicates PM2.5 is the same as PM10

Source of other values: San Joaquin Valley Air Pollution Control District, Authority to Construct

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Year	Comments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.9	0.88	197	422	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	7.9	2.80	224	944	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	7.9	7.88	1,772	3,797	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.9	0.72	133	318	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.4	0.36	67	159	Gasoline 9,500 watt continuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUCK	2007	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	7.9	2.80	224	944	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	7.9	7.88	1,772	3,797	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	7.9	7.88	1,772	3,797	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	7.9	2.80	224	944	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	7.9	7.88	1,772	3,797	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	7.9	7.88	1,772	3,797	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	2.6	2.16	399	954	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	7.9	7.88	1,772	3,797	
11	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	7.9	7.88	1,772	3,797	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	3.5	0.39	10	110	Limited Use
				4572.1			21,543					17,424	38,967	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	700,000
Increase Fraction	0.875

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	Nox g/bhp-hr	Load Factor	Increased Hours/Year	HP x Nox Factor	Weighted Avg Nox/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	0	5.93	0.44	197	1,779	0.07	154,106	0.17	0.22
2	HITACHI	EX700H Excavator	1991	450	0	5.93	0.38	224	2,669	0.08	227,143	0.25	0.33
3	CAT	CAT 980G Loader	2001	300	2	3.79	0.36	1,772	1,137	0.39	725,264	0.80	0.68
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	4.63	0.31	133	222	0.04	9,170	0.01	0.01
5	BOBCAT	250 WELDER	2008	12.5	3	4.63	0.45	67	58	0.02	1,733	0.00	0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUCK	2007	385	3	2.32	0.38	1,772	893	0.24	601,403	0.66	0.34
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	3.79	0.38	224	1,721	0.05	146,463	0.16	0.14
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	4.75	0.37	1,772	317	0.48	208,020	0.23	0.24
9	GENIE	10,000 LB LIFT	2007	82	2	4.75	0.2	1,772	390	0.48	138,029	0.15	0.16
10	KOMATSU	ROCK TRUCK	2010	385	3	2.32	0.38	1,772	893	0.24	601,403	0.66	0.34
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	2.32	0.38	224	457	0.03	38,903	0.04	0.02
12	CAT	980H WHEEL LOADER	2007	355	3	2.32	0.36	1,772	824	0.24	525,354	0.58	0.30
13	CAT	980M WHEEL LOADER	2015	378	4	0.26	0.36	1,772	98	0.03	62,690	0.07	0.00
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	1.29	0.38	399	226	0.03	34,253	0.04	0.01
15	BOBCAT	SKID STEER S570	2017	66.8	4	2.74	0.37	1,772	183	0.28	119,995	0.13	0.08
16	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	1.29	0.5	1,772	538	0.13	476,572	0.53	0.15
17	GROVE	RT74 CRANE	1988	200	0	5.93	0.29	0	1,186	0.00	0	0.00	0.00
				4272.1		**58.99**		**17,415**	**13,590**	**2.80**	**4,070,500**	**4.49**	**3.04**

Fleet Average for ARB Offroad Fleet Reg Compliance 3.18

Mitigated Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	Nox g/bhp-hr	Load Factor	Increased Hours/Year	HP x Nox Factor	Weighted Avg Nox/bhp-hr	Emissions (grams/year)	Tons/Year	Weighted Avg Nox/bhp-hr Based on Emissions
1	CAT	D8N TRACTOR		300	4	0.26	0.44	197	78	0.00	6,757	0.01	0.00
2	HITACHI	EX700H Excavator		450	4	0.26	0.38	224	117	0.00	9,959	0.01	0.00
3	CAT	CAT 980G Loader		300	4	0.26	0.36	1,772	78	0.03	49,754	0.05	0.01
4	GENIE	S60 4X2 BOOM LIFT		48	4	2.75	0.31	133	132	0.02	5,446	0.01	0.01
5	BOBCAT	250 WELDER		12.5	4	2.75	0.45	67	34	0.01	1,029	0.00	0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUCK		385	4	0.26	0.38	1,772	100	0.03	67,399	0.07	0.02
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR		454	4	0.26	0.38	224	118	0.00	10,048	0.01	0.00
8	BOBCAT	S220 SKID STEER LOADER		66.8	4	2.74	0.37	1,772	183	0.28	119,995	0.13	0.30
9	GENIE	10,000 LB LIFT		82	4	0.26	0.2	1,772	21	0.03	7,555	0.01	0.00
10	KOMATSU	ROCK TRUCK		385	4	0.26	0.38	1,772	100	0.03	67,399	0.07	0.02
11	TEREX	300LC-2 EXCAVATOR		197	4	0.26	0.38	224	51	0.00	4,360	0.00	0.00
12	CAT	980H WHEEL LOADER		355	4	0.26	0.36	1,772	92	0.03	58,876	0.06	0.01
13	CAT	980M WHEEL LOADER		378	4	0.26	0.36	1,772	98	0.03	62,690	0.07	0.01
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	1.29	0.38	399	226	0.03	34,253	0.04	0.04
10	BOBCAT	SKID STEER S570		66.8	4	2.74	0.37	1,772	183	0.28	119,995	0.13	0.30
11	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	1.29	0.5	1,772	538	0.13	476,572	0.53	0.56
17	GROVE	RT74 CRANE		200	4	0.26	0.29	0	52	0.00	0	0.00	0.00
				4272.1		**16.42**		**17,415**	**2,202**	**0.92**	**1,102,087**	**1.21**	**1.29**

Fleet Average for ARB Offroad Fleet Reg Compliance 0.52

Nox emissions weighted average by hours of use per year. g/ton 907185

Offroad CalEEMod Results

	ROG	NOX	CO	SO2	PM10	PM2.5	CO2e
Off-Road Equipmer	0.4534	5.9177	7.4119	0.0127	0.1762	0.1718	1124.0872
Off-Road Equipmer	0.36	4.879	6.1704	0.0106	0.1353	0.1314	938.1693
Off-Road Equipmer	0.8134	10.7967	13.5823	0.0233	0.3115	0.3032	2062.2565

CalEEMod results slightly different than using off model calculations because CalEEMod run doesn't include Tier 0 and same equipment with different Tiers.

Onsite Mobile Source Truck Emissions

	Baseline	Increase	New Limit
Expanded Operation Throughput (tons/yr)	800,000	700,000	1,500,000
Average Daily Throughput (tons/day)	3,556	3,111	6,667
Truck Capacity (Tons)	25	25	25
Truck Loads per Year	32,000	28,000	60,000
Truck Trip Length Average (miles)	25		

Average Daily Truck Load and Trips	**Baseline**	**Increase**	**New Limit**
Days of Operation	225		
Average Daily Haul Loads	142	124	267
Average Daily Round Trips	284	249	533

Average for 260 days for CalEEMod Weekday Run

	Loads	Round Trips	Annual RT	Loads/yr	VMT/year
Baseline 800,000 tons	123	246	64,000	32,000	1,600,000
With Project 1,500,000 tons	231	462	120,000	60,000	3,000,000
Increase from Project 700,000 tons	108	215	56,000	28,000	1,400,000

Note: Days adjusted from 225 to 260 in order to use CalEEMod weekday settings and maintain annual VMT.

Maximum Daily Truck Loads Based on Baseline Activity

	Loads/Day	Trips/Day	Tons/Day
Max Haul Truck Trips (25 tons/truck)	300	600	7,500
Existing Baseline (25 tons/truck)	150	301	3,760
Project Increase (25 tons/truck)	150	299	3,740

The current baseline for maximum loads per day is assumes the permitted limit of 376 loads per day in effect regardless of the annual throughput

Maximum Daily Truck Loads Based on Permit Limits

	Loads/Day	Trips/Day	Tons/Day	Tons/Year
Max Haul Truck Trips (25 tons/truck)	300	600	7,500	1,687,500
Existing Baseline (25 tons/truck)	150.5	301	3,763	846,563
Project Increase (25 tons/truck)	149.5	299	3,738	840,938

Max Daily Calculation		
Max Throughput/Day (tons) 600 truck trips	7,500	
Max Daily Existing Limit 376 truck trips	3,763	
Max Daily Existing Baseline (301)		301
Increase From Project 224 truck trips	**3,738**	
Average Daily Increase 700,000 tons/year	**3,111**	
Multiplier to Convert Avg Daily to Max Daily	**1.20**	

Max daily is lower than the average daily because max daily represents the difference between permitted maximum and proposed maximum truck trips. Average daily is the increase from baseline based on maximum annual emissions.

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	142		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	1,500,000	142	blasts/yr
Increased Blasts from Project/Yr		66	

Emission Factors

	PM10 (kg/Mg)
Wet Drilling Unfragmented Stone	0.00004

PM10 EF = 0.000014(A)^(1.5)(0.52) , where A = horizontal area in ft2 with a scaling factor for <10um of 0.52
PM2.5 EF = 0.000014(A)^(1.5)(0.03) , where A = horizontal area in ft2 with a scaling factor for <2.5um of 0.03
Source of PM2.5 drilling: 18.5 percent of PM10 emissions, according to the values for controlled tertiary crushing in Table 11.19.2-1 from U.S.

PM10 Dust Emission Factor (lbs/blast)	0.060376618
PM2.5 Dust Emission Factor (lbs/blast)	0.003483266

Dust Emissions

		PM10 EF (lbs/blast)	PM2.5 EF (lbs/blast)	PM10 Emissions (lbs/day)	PM2.5 Emissions (Lbs/day)	PM10 Emissions (tons/year)	PM2.5 Emissions (tons/year)
Baseline	Blasting	0.0604	0.0035	0.0604	0.0035	0.0023	0.0001
	Drilling	0.65	0.12	0.6500	0.1200	0.0246	0.0045
	Total			**0.7104**	**0.1235**	**0.0269**	**0.0047**
With Project	Blasting	0.0604	0.0035	0.0604	0.0035	0.0043	0.0002
	Drilling	0.65	0.12	0.6500	0.1200	0.0462	0.0085
	Total			**0.7104**	**0.1235**	**0.0505**	**0.0088**
Net Increase from Project	Blasting and Drilling			0.0000	0.0000	0.0236	0.0041

Daily rates are unchanged since the number of blasts per day would not change.

Blasting Emission Factors with ANFO	**CO (lbs/ton)**	**Nox (lbs/ton)**	**SO2 (lbs/ton)**
	67	17	2

Emission Calculations

	CO (lbs/blast)	CO Emissions (lbs/year)	CO Emissions (tons/Yr)	NOx (lbs/blast)	NOx Emissions (lbs/year)	NOx Emissions (tons/Yr)	SO2 (lbs/blast)	SO2 Emissions (lbs/year)	SO2 Emissions (tons/Yr)
Existing Baseline 800,000 tons/year	335	25,389	12.69	85	6,442	3.22	10	758	0.38
With Project 1,500,000 tons/year	335	47,605	23.80	85	12,079	6.04	10	1,421	0.71
Net Increase from Project			11.11			2.82			0.33

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explosives)
5 tons of ANFO/blast

Unpaved Road Dust

Onsite Onroad Haul Truck Activity

	Miles/ Round Trip	Weight Empty (tons)	Weight Full (tons)	Truck Loads/Year
Existing Haul Trucks	0.8	15	40	32,000
With Project Haul Trucks	0.8	15	40	60,000
Project Haul Trucks	0.8	15	40	28,000

Emission Factors

	k (constant PM10)	k (constant PM2.5)	s (% silt content)	W (vehicle weight tons)	PM10 EF (lbs/VMT)	PM2.5 EF (lb/VMT)
Loaded Trucks 40 tons	1.5	0.15	5	40	2.1884	0.2188
Unloaded Trucks 15 tons	1.5	0.15	5	15	1.4075	0.1407
Average					1.0942	0.1094

$$E = k\ (s/12)^a (W/3)^b$$

Unmitigated Emissions

	PM10			PM2.5		
	lbs/hour	lbs/day	tons/year	lbs/hour	lbs/day	tons/year
Existing Haul Trucks	13.83	124.49	14.01	1.38	12.45	1.40
With Project Haul Trucks	25.94	233.43	26.26	2.59	23.34	2.63
Increase from Project	**12.10**	**108.93**	**12.25**	**1.21**	**10.89**	**1.23**

Mitigated Emissions

	PM10			PM2.5		
	lbs/hour	lbs/day	tons/year	lbs/hour	lbs/day	tons/year
Existing Haul Trucks	5.39	48.55	5.46	0.54	4.86	0.55
With Project Haul Trucks	10.12	91.04	10.24	1.01	9.10	1.02
Increase from Project	**4.72**	**42.48**	**4.78**	**0.47**	**4.25**	**0.48**

	Baseline	Increase	New Limit
Average Daily Haul Loads (Max)	142	124	267
Average Daily Round Trips	284	249	533
VMT/Day	113.8	99.6	213.3
VMT/Year	25,600	22,400	48,000

Notes:
- Equation and methods from US EPA AP-42, Section 13.2.2, Unpaved Roads. Website: www.epa.gov/ttn/chief/ap42/ch13/final/c13s0202.pdf, equation 1a
- Constant "a" = 0.9; constant "b" = 0.45
Trips per day based on increasing thoughput from 800,000 baseline to 1,500,000 tons/year
- The weight of the haul truck is defined as the maximum gross weight in California, which is 80,000 pounds www.dot.ca.gov/hq/traffops/trucks/trucksize/weight.htm

- silt content: San Joaquin Valley Air Pollution Control District Rule 8011, Section 3.55, indicates that silt content level is assumed to be 5 percent or greater, unless a person can show by sampling and analysis that the silt content is less than 5 percent.
- Assumes 225 days/year, 9 hours/day
- The reduction from watering from South Coast Air Quality Management District, 2007, Fugitive Dust Mitigation Measure Table XI-D, Unpaved Roads. Website: www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html. Also from Western Regional Air Partnership (WRAP) Fugitive Dust Handbook, 2006, http://www.wrapair.org/forums/dejf/fdh/content/fdhandbook_rev_06.pdf (Table 6-6)
CalEEMod reduction from watering is 55% for 2 times per day watering and 61% for 3 times per day watering.

Onsite Offroad Haul Truck Activity

	Miles/Trip	Weight Empty (tons)	Weight Full (tons)	Truck Loads/Year
Existing Haul Trucks	0.5	40	80	20,000
With Project Haul Trucks	0.5	40	80	37,500
Project Haul Trucks	0.5	40	80	17,500

Emission Factors

	k (constant PM10)	k (constant PM2.5)	s (% silt content)	W (vehicle weight tons)	PM10 EF (lbs/VMT)	PM2.5 EF (lb/VMT)
Loaded Trucks 80 tons	1.5	0.15	5	80	2.9894	0.2989
Unloaded Trucks 40 tons	1.5	0.15	5	40	2.1884	0.2188
Average				60	1.4947	0.1495

$$E = k\,(s/12)^a (W/3)^b$$

VMT Estimate

	Avg Daily Tons	Tons/Truck	Avg Daily Loads	Avg Daily Trips	Avg Distance (miles)	VMT/Day	
Existing Haul Trucks	3,556	40	89	178	0.5	88.9	
With Project Haul Trucks	6,667	40	167	333	0.5	166.7	39166.67
Project Haul Trucks	3,111	40	78	156	0.5	77.8	

Unmitigated Emissions

	PM10			PM2.5		
	lbs/hour	lbs/day	tons/year	lbs/hour	lbs/day	tons/year
Existing Haul Trucks	14.76	132.86	14.95	1.48	13.29	1.49
With Project Haul Trucks	27.68	249.12	28.03	2.77	24.91	2.80
Increase with Project	**12.92**	**116.26**	**13.08**	**1.29**	**11.63**	**1.31**

Mitigated Emissions

	PM10			PM2.5		
	lbs/hour	lbs/day	tons/year	lbs/hour	lbs/day	tons/year
Existing Haul Trucks	5.76	51.82	5.83	0.58	5.18	0.58
With Project Haul Trucks	10.80	97.16	10.93	1.08	9.72	1.09
Increase with Project	**5.04**	**45.34**	**5.10**	**0.50**	**4.53**	**0.51**

CalEEMod 61% reduction from 3 times per day watering of unpaved roads

Maximum Daily Mitigated

	With Project (tons/day)
Maximum Daily Throughput permitted	2,800
Average Daily Throughput	3,111
Max Daily Adjustment Factor	1.2

Mitigated Emissions (Max Daily)

	PM10 (lbs/day)	PM2.5 (lbs/day)
Existing Haul Trucks	62.18	6.22
With Project Haul Trucks	116.59	11.66
Increase with Project	54.41	5.44

Max Daily emssions based on average daily emissions multiplied by the ratio of average to maximum throughput.

Mitigated Unpaved Road Dust Summary

	PM10 (tons/year)	PM2.5 (tons/year)
Baseline On-Road Haul Trucks	5.46	0.55
Baseline Off-Road Haul Trucks	5.83	0.58
Total	**11.29**	**1.13**
With Project On-Road Haul Trucks	10.24	1.02
With Project Off-Road Haul Trucks	10.93	1.09
Total	**21.17**	**2.12**
Project Increase On-Road Haul Trucks	4.78	0.48
Project Increase Off-Road Haul Trucks	5.10	0.51
Total	**9.88**	**0.99**

Paved Road Mitigation Measure (if needed)

AP-42 Paved Road Equation $E_{ext} = [\, k\,(sL)^{0.91} \times (W)^{1.02} \,]\,(1 - P/4N)$

Where:
Eext = annual or other long-term average emission factor in the same units as k,
k = particle size multiplier for particle size range and units of interest (see below),
sL = road surface silt loading (grams per square meter) (g/m2),
W = average weight (tons) of all the vehicles traveling the road (2.4 tons)
P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period, and
N = number of days in the averaging period (e.g., 365 for annual, 91 for seasonal, 30 for monthly).

Rainy Days P = 50 for SJV	50			
Silt Loading	Normal 0.4	Worst Case 3	70 at sand and gravel ops	70
Average Weight 30 tons	30			
k particle size muliplier for PM10 lb/vmt	0.016			

k	0.016
sL	0.434384772
W	32.11172825
1-P/4N	0.946808511

Pounds per VMT Paved Road	0.211	
Pounds per VMT Unpaved Road	1.094	
Emission Reduction Fraction	0.81	
	lbs/Year	**Tons/year**
VMT from Haul Trucks	39000	
Lbs Unpaved	42,673.49	21.34
Lbs Paved	8,241.10	4.12
Mitigate 0.15 Miles of Unpaved Rd	4966.21	2.48
Paving in Feet	792	

Storage Piles

	PM10 EF (lb/acre/day)	PM2.5 EF (lb/acre/day)	Control Efficiency	Pile Size (acres)	PM10 Emissions lb/hour	PM10 Emissions lb/day	PM10 Emissions tons/year	PM2.5 Emissions lb/hour	PM2.5 Emissions lb/day	PM2.5 Emissions tons/year
Existing Storage Piles	7.1	3.9	0.39	0.8	0.22	2.22	0.25	0.12	1.22	0.14
Storage Piles with Project	7.1	3.9	0.39	1.5	0.42	4.15	0.47	0.23	2.28	0.26
Increase From Project	7.1	3.9	0.39	0.7	0.19	1.94	0.22	0.11	1.06	0.12

US EPA AP-42, Section 11.9, Western Surface Coal Mining, Table 11.9-1: http://www.epa.gov/ttnchie1/ap42/ch11/final/c11s09.pdf
The emission factor is 0.72*u for TSP; the "u" refers to the wind speed, which is an average of 4.5 knots (2.3 meters per second or 5.2 miles per hour), see the Wind Rose exhibit in the Air Quality, Greenhouse Gas, and Health Risk Assessment.
TSP (<=30 mm) = 0.72 x u lb TSP/acre-hr: Where u (wind speed) = 5.2 mph
0.72 x 5.2 = 3.74 lb TSP/acre-hr
PM10 = TSP x SF: Where SF (Scaling Factor) = 0.19
PM10 = 3.74 x 0.19 = 0.79 lb PM10/acre-hr x 10 operating hrs/day = 7.1 lb PM10/acre-day
PM2.5 = TSP x SF: Where SF (Scaling Factor) = 0.105
PM2.5 = 3.74 x 0.105 = 0.39 lb PM2.5/acre-hr x 10 operating hrs/day = 3.9 lb PM2.5/acre-day
A scaling factor for active storage pile PM10 was not provided in AP-42 Table 11.9-1. Therefore, a scaling factor was derived as follows:

The scaling factor for PM10 for bulldozing overburden (0.75 x PM15) was used as a basis. Since the scaling factor for bulldozing overburden is to be applied to the corresponding PM15 emission factor and since there is no data provided for PM15 for active storage pile emissions, a PM15 value was estimated for active storage piles using the ratio of PM15 to TSP provided for bulldozing overburden as follows:
Bulldozing overburden TSP = 5.7 (s)1.2 / M1.3 lb/hr, where s (silt content) = 6.9%, and M (moisture content) = 7.9%.
Bulldozing overburden TSP = 5.7 x 6.91.2 / 7.91.3 = 3.94 lb/hr
Bulldozing overburden PM15 = 1.0 (s)1.5 / M1.4 lb/hr
Bulldozing overburden PM15 = 1.0 x 6.91.5 / 7.91.4 = 1.00 lb/hr
The ratio of PM15 to TSP = 1.00/3.94 = 0.25
Applying the PM15 to TSP ratio and PM10 scaling factor based on bulldozing overburden, a scaling factor for the active storage pile PM10 is estimated as 0.25 x 0.75 = 0.19.

The scaling factor for PM2.5 is 0.105, as defined in AP-42 Table 11.9-1, dated July 1998, and is applied to the TSP equation as noted in the referenced table
Assumes water spray for dust suppression at three times per day and 61% emission reductionRichards, John R, et, al. 2009. PM4 Crystalline Silica Emission Factore and Ambient Concentrations at Agregate-Producing Sources in California, AWMA 59: 1287-1295

Truck Loading Dust

Truck Loading to On-Road 25 ton/load Haul Trucks

		Emission Factors (lbs/ton)		PM10 Emisions			PM2.5 Emissions		
	Material Loaded (tons/year)	**PM10**	**PM2.5**	**lbs/hour**	**lb/day**	**tons/year**	**lb/hour**	**lb/day**	**tons/year**
Loading from Existing Ops	800,000	0.0001	0.0000283	0.04	0.36	0.04	0.01	0.10	0.01
Loading with Project	1,500,000	0.0001	0.0000283	0.07	0.67	0.08	0.02	0.19	0.02
Increase from Project	**700,000**	**0.0001**	**0.0000283**	**0.03**	**0.31**	**0.04**	**0.01**	**0.09**	**0.01**

Truck Loading to Off-Road 40 ton/load Haul Trucks

		Emission Factors (lbs/ton)		PM10 Emisions			PM2.5 Emissions		
	Material Loaded (tons/year)	**PM10**	**PM2.5**	**lbs/hour**	**lb/day**	**tons/year**	**lb/hour**	**lb/day**	**tons/year**
Loading from Existing Ops	800,000	0.0001	0.0000283	0.04	0.36	0.04	0.01	0.10	0.01
Loading with Project	1,500,000	0.0001	0.0000283	0.07	0.67	0.08	0.02	0.19	0.02
Increase from Project	**700,000**	**0.0001**	**0.0000283**	**0.03**	**0.31**	**0.04**	**0.01**	**0.09**	**0.01**

The PM10 emission factor is 0.0000460 lb/ton and the emission factor for PM2.5 is 0.0000130 lb/ton. The ratio of PM2.5 to PM10 is 0.0000130/0.0000460 = 0.283. Since the PM10 emission factor is estimated to be 0.00010 lb/ton, the emission factor for PM2.5 is estimated to be 0.00010 lb/ton x 0.283

Emission factor for PM10 is from EPA AP-42, Table 11.19.2-2 (Emission Factors for Crushed Stone Processing Operations). Website: http://www.epa.gov/ttnchie1/ap42/ch11/final/c11s1902.pdf

- Emission factor for PM2.5 is calculated based on a ratio of controlled emission factors for a conveyor transfer point. The emission factors for conveyor transfer point (controlled) will be used, based on AP-42 11.19.2, Table 11.19.2-2, Final Section, updated August 2004. The PM10 emission factor is 0.0000460 lb/ton and the emission factor for PM2.5 is 0.0000130 lb/ton. The ratio of PM2.5 to PM10 is 0.0000130/0.0000460 = 0.283. Since the PM10 emission factor is estimated to be 0.00010 lb/ton, the emission factor for PM2.5 is estimated to be 0.00010 lb/ton x 0.283 = 0.000028 lb/ton.

- Assumes 225 days/year and 9 hours/day

Wind Erosion

		Emissions Factors (tons/acre/year)			PM10 Emissions			PM2.5 Emissions		
	Area (acres)	TSP	PM10	PM2.5	lbs/hour	lb/day	tons/year	lb/hour	lb/day	tons/year
Existing	0.39	0.38	0.228	0.01178	0.0203	0.4872	0.0889	0.0010	0.0252	0.0046
With Project	0.73	0.38	0.228	0.01178	0.0381	0.9136	0.1667	0.0020	0.0472	0.0086
Increase from Project	0.34	0.38	0.228	0.01178	0.0178	0.4263	0.0778	0.0009	0.0220	0.0040

Exposed area is assumed to be the proposed aggregate processing area, but not the drilling and blasting area consisting of rock surface.

Exposed areas are assumed to be the areas of the pit that are exposed, where topsoils are removed and drilling and blasting occur, as well as berms and benchs prior to stabilization.

Topsoils are removed and drilling and blasting occur, as well as berms and benchs prior to stablization. Since it is assumed that 17,000 square feet (0.39 acres) are disturbed for each blast and there are a maximum of 45

blasts per year, then 0.39 acres is assumed to be disturbed at any given time. Areas that are not disturbed consist of hard rock and have negligible potential for wind erosion.

Emission factor for PM10 from US EPA AP-42, Table 11.9-4 for total suspeded particulates (TSP). It is assumed that PM10 is 60% of TSP and PM2.5 is 3.1%, according to information in Table 11.9-2 for grading.

It is assumed that the daily and hourly estimates are over the entire year

The increase in area exposed is assumed to be proportional to the increase in annual throughput

Truck Loading to Off-Road 40 ton/load Haul Trucks

		Emission Factors (lbs/ton)		PM10 Emisions			PM2.5 Emissions		
	Material Loaded (tons/year)	PM10	PM2.5	lbs/hour	lb/day	tons/year	lb/hour	lb/day	tons/year
Loading from Existing Op	800,000	0.0001	0.0000283	0.04	0.36	0.04	0.01	0.10	0.01
Loading with Project	1,500,000	0.0001	0.0000283	0.07	0.67	0.08	0.02	0.19	0.02
Increase from Project	**700,000**	**0.0001**	**0.0000283**	**0.03**	**0.31**	**0.04**	**0.01**	**0.09**	**0.01**

					PM10 Emissions			PM2.5 Emissions		
	PM10 EF (lb/acre/day)	PM2.5 EF (lb/acre/day)	Control Efficiency	Pile Size (acres)	lb/hour	lb/day	tons/year	lb/hour	lb/day	tons/year
Existing Storage Piles	7.1	3.9	0.39	0.8	0.22	2.22	0.25	0.12	1.22	0.14
Storage Piles with Projec	7.1	3.9	0.39	1.5	0.42	4.15	0.47	0.23	2.28	0.26
Increase From Project	7.1	3.9	0.39	0.7	0.19	1.94	0.22	0.11	1.06	0.12

		Emissions Factors (tons/acre/year)			PM10 Emissions			PM2.5 Emissions		
	Area (acres)	**TSP**	**PM10**	**PM2.5**	**lbs/hour**	**lb/day**	**tons/year**	**lb/hour**	**lb/day**	**tons/year**
Existing	0.39	0.38	0.228	0.01178	0.0203	0.4872	0.0889	0.0010	0.0252	0.0046
With Project	0.73	0.38	0.228	0.01178	0.0381	0.9136	0.1667	0.0020	0.0472	0.0086
Increase from Project	0.34	0.38	0.228	0.01178	0.0178	0.4263	0.0778	0.0009	0.0220	0.0040

Total Fugitive Dust

	PM10 tons/year	**PM2.5 ton/year**
Existing	0.37813	0.1528042
With Project	0.70899	0.2865079
Increase from Project	0.33086	0.1337037

Employee Motor Vehicle Emissions

	Employees	Trips/Emp	Total Trips
Employees (existing)	27	2	54
Employees with project	30	2	60
Increase	3	2	6

Adjusted Fleet Mix for No Trucks	LDA	LDT1	LDT2	MDV	Total
Default Fleet Mix	0.5069	0.034567	0.171206	0.149208	0.861881
Adjusted Fleet Mix	0.585543	0.039930	0.197768	0.172357	0.995597
					0.133716

	LHD1 Frac	LHD2 Frac	MHD Frac	HHD Frac	OBUS	UBUS	SBUS	MH	Diff to Allocate
Revised Mix	0	0	0.00000	0.00000	0	0	0	0	0.00000
Default Frac	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.001155	0.000818	0.133716
Allocation Fraction	-0.024362	-0.005798	-0.021031	-0.077362	-0.001819	-0.001371	-0.001155	-0.000818	**0.133716**

2020 CalEEMod Fleet Mix for Tulare County

	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH	
Default Fleet Mix	FleetMix	0.5069	0.034567	0.171206	0.149208	0.024362	0.005798	0.021031	0.077362	0.001819	0.001371	0.004402	0.001155	0.000818	
Revised Fleet Mix		**0.585543**	**0.039930**	**0.197768**	**0.172357**	**0**	**0**	0.00000	0.00000	0	0	0.004402	0	0.00000	0.999999

	ROG (tons/year)	NOX (tons/year)	CO (tons/year)	SO2 (tons/year)	PM10 (tons/year)	PM2.5 (tons/year)	CO2e (tons/year)
Baseline (800,000 tons/yr)	0.009	0.018	0.171	0.001	0.050	0.013	45.350
With Project 1,500,000 tons/y	0.010	0.020	0.189	0.001	0.055	0.015	50.380
Increase from Project (700,00	0.001	0.002	0.018	0.0000	0.006	0.002	5.030

Permitted Equipment

Emissions from Permitted Equipment

	Throughput (tons/year)	PM10 dust (lbs/day	PM2.5 dust (lbs/day)	PM10 dust (tons/year)	PM2.5 dust (tons/year)
Existing Baseline Emissions	800,000	35.57	6.58	4.00	0.74
Permit Limit	1,500,000	66.70	12.34	7.50	1.39
Increase from Baseline from Project	700,000	31.13	5.76	3.50	0.65

Project currently operating at 53% of Permitted Emission Limits
With Project the facility would operate at permitted limits.
SJVAPCD Permit S-4136-3-6

Source of PM2.5 dust: 18.5 percent of PM10 emissions, according to the values for controlled tertiary crushing in Table 11.19.2-1 from U.S. Environmental Protection Agency 2004. AP-42 Section 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing. Website: www.epa.gov/ttnchie1/ap42/ch11/final/c11s1902.pdf.

Source of PM2.5 exhaust: CalEEMod manual (Appendix D, table 3.5) indicates PM2.5 is the same as PM10
Source of other values: San Joaquin Valley Air Pollution Control District, Authority to Construct

Electricity Consumption

	MWh/Year
Consumption (Existing Permit Limit 1,000,000)	3,902.99
Consumption (Baseline 800,000 tons/yr	3,122.39
Consumption(Increase 1,500,000 tons/yr	5,854.49
Consumption (Increase from Project 700,000 tons/yr	**2,732.10**

Consumption from existing permit from Deer Creek Rock Company, Inc. Quarry Expansion, November 2014
Consumption rate based on actual usage at the existing facility.

SCE Emission Factors	
Business As Usual Rate	**lbs/MWh**
Carbon Dioxide	630.89
Methane	0.029
Nitrous Oxide	0.006

2020 Emissions Rate	**lbs/MWh**
Carbon Dioxide	523.63
Methane	0.024
Nitrous Oxide	0.004

	CO2 MT	**CH4 MT**	**NO2 MT**	**CO2e MT**
Baseline Emissions	741.61	1.03	1.69	744.33
Emissions with Project	1,390.53	0.40	3.17	1,394.09
2020 Emissions	648.91	0.74	1.48	651.13

GWP CO2	1
GWP CH4	25
GWP NO2	298
Convert lbs to Mtons	0.000453592

Emissions Summary

Deer Creek Mine Emission Summary

Existing Facility Baseline Emissions (800,000 tons/year)

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Drilling and Blasting	0.00	3.22	12.69	0.38	0.00	0.00	
Off-Road Equipment (exhaust)	1.74	5.67	6.72	0.01	0.14	0.14	1,124.09
Water Trucks (exhaust)	0.07	0.64	0.19	0.00	0.01	0.01	86.37
Onsite Work Trucks	0.02	0.38	0.15	0.15	0.00	0.00	7.35
On-Road Haul Trucks	0.30	10.33	1.75	0.03	0.72	0.22	2,930.36
Employee Commute	0.01	0.02	0.17	0.00	0.00	0.00	45.35
Unpaved Road Dust (fugitive dust)	0.00	0.00	0.00	0.00	9.93	1.13	
Dust (loading, wind, storage piles, unpaved roads, blasting)	0.00	0.00	0.00	0.00	0.80	0.21	
Paved Road Dust Haul Trucks	0.00	0.00	0.00	0.00	0.68	0.19	
Total	**2.14**	**20.25**	**21.67**	**0.57**	**12.29**	**1.90**	**4,193.51**

Emissions with Project (1,500,000 tons/year)

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Drilling and Blasting	0.00	6.04	23.80	0.71	0.00	0.00	
Off-Road Equipment (exhaust)	3.27	10.63	12.60	0.02	0.26	0.26	2062.2565
Water Trucks	0.12	1.20	0.35	0.00	0.03	0.02	237.46
Onsite Work Trucks	0.03	0.09	0.13	0.00	0.00	0.00	13.78
On-Road Haul Trucks	0.57	19.39	3.28	0.06	1.35	0.42	5,503.35
Employee Commute	0.01	0.02	0.19	0.00	0.06	0.01	50.38
Unpaved Road Dust (fugitive dust)	0.00	0.00	0.00	0.00	18.63	2.12	
Dust (loading, wind, storage piles, unpaved roads, blasting)	0.00	0.00	0.00	0.00	1.50	0.39	
Paved Road Dust Haul Trucks	0.00	0.00	0.00	0.00	1.28	0.35	
Total	**4.00**	**37.38**	**40.36**	**0.79**	**23.10**	**3.57**	**7,867.23**

Increase From the Project (700,000 tons/year)

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Drilling and Blasting	0.00	2.82	11.11	0.33	0.00	0.00	
Off-Road Equipment	1.53	4.96	5.88	0.01	0.12	0.12	938.17
Water Trucks	0.06	0.56	0.16	0.00	0.01	0.01	109.54
Onsite Work Trucks	0.02	0.33	0.13	0.00	0.00	0.00	6.43
On-Road Haul Trucks	0.27	9.02	1.53	0.03	0.63	0.20	5503.35
Employee Commute	0.00	0.00	0.02	0.00	0.06	0.01	5.03
Unpaved Road Dust (fugitive dust)	0.00	0.00	0.00	0.00	8.69	0.87	
Dust (loading, wind, storage piles, unpaved roads, blasting)	0.00	0.00	0.00	0.00	0.70	0.18	
Paved Road Dust Haul Trucks	0.00	0.00	0.00	0.00	0.60	0.16	
Total	**1.87**	**17.70**	**18.83**	**0.37**	**10.81**	**1.56**	**6562.53**

2020 Unmitigated Emissions From 800,000 Tons/Year Baseline

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Project Increase 300,000 tons/year	0.80	7.59	8.07	0.16	4.63	0.67	2,812.51
Project Increase 395,000 tons/year	**1.05**	**9.99**	**10.62**	**0.21**	**6.10**	**0.88**	3,750.02
Project Increase 400,000 tons/year	**1.07**	**10.11**	**10.76**	**0.21**	**6.17**	**0.89**	**3750.02**
Project Increase 500,000 tons/year	1.33	**12.64**	13.45	0.26	7.72	1.11	4,687.52
Project Increase 600,000 tons/year	1.60	**15.17**	16.14	0.32	9.26	1.34	5,625.02
Project Increase 700,000 tons/year	1.87	**17.70**	18.83	0.37	10.81	1.56	6,562.53

2025 Unmitigated Emissions Increase From 800,000 Tons/Year Baseline

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
On Road Haul Trucks 2025 (700,000 ton	0.1580	4.8275	1.221	0.026	0.6049	0.1728	2,383.98

ARB Truck and Bus Regulation requires phase out pre-2010 trucks by 2024.

Project Increase 400,000 tons/year	1.0054	7.7153	10.5833	0.2110	6.1613	0.8781	1,967.51
Project Increase 500,000 tons/year	1.26	**9.64**	13.23	0.26	7.70	1.10	2459.39
Project Increase 600,000 tons/year	1.5080	**11.5729**	15.8749	0.3166	9.2419	1.3172	2,951.27
Project Increase 700,000 tons/year	1.76	**13.50**	18.52	0.37	10.78	1.54	3443.15

Off Road Equipment Mitigation

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Off Road Equipment 2020	1.5251	4.9613	5.8798	0.0106	0.1208	0.1204	938.17
Off Road Equipment Tier 4	0.2613	1.6643	5.1970	0.0100	0.0152	0.0154	938.17
Onsite Vehicle Reduction	0.0585	0.4017	0.1404	0.0000	0.0092	0.0089	0.0000
Emission Reduction	**1.3223**	**3.6987**	**0.8232**	**0.0006**	**0.1147**	**0.1139**	**0.00**

2020 Mitigated Emissions 800,000 Ton/Year Baseline w/Tier 4 Equipment

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Project Increase 400,000 tons/year	-0.2687	6.2886	9.7999	0.2083	5.9827	0.7660	3,750.01
Project Increase 500,000 tons/year	0.0114	8.9434	12.6237	0.2638	7.6035	0.9999	4,687.52
Project Increase 600,000 tons/year	0.2781	**11.4718**	15.3131	0.3167	9.1472	1.2226	5,625.02
Project Increase 700,000 tons/year	0.5448	**14.0002**	18.0025	0.3696	10.6908	1.4454	6,562.52

2025 Mitigated Emissions 800,000 Ton/Year Baseline w/Tier 4 Off Road Equipment

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Project Increase 500,000 tons/year	-0.0656	5.9455	12.4059	0.2632	7.5869	0.9838	2,459.39
Project Increase 600,000 tons/year	0.1858	7.8743	15.0517	0.3160	9.1272	1.2033	2,951.27
Project Increase 700,000 tons/year	0.44	**9.80**	17.70	0.37	8.19	1.42	3443.15

Less than significant emissions with Tier 4 off-road equipment and off-road haul trucks at full 1,500,000 ton/year throughput

Fugtive Dust Reduction from Mitigation	2.48

Greenhouse Gas Emissions

	Baseline	With Project	Increase from Project
Off-Road Equipment	1,124.09	2062.26	938.17
On-Site Work Vehicles	84.35	216.07	99.74
On-Road Haul Trucks	2,637.32	4732.88	2050.22
Employee Commute Trips	40.82	43.33	2.16
Electricity Use	744.33	1394.09	651.13
	4,630.90	8448.62	3741.42

LCFS 10% in 2020 Baseline and 14% in 2025 with project and project increase.

Offroad Equipment Estimates

	ROG	NOX	CO	SO2	PM10	PM2.5	CO2e
Baseline Off-Road Equipment (exhaust)	0.4534	5.9177	7.4119	0.0127	0.1762	0.1718	1124.0872
From Project Off-Road Equipment (exhau	0.36	4.879	6.1704	0.0106	0.1353	0.1314	938.1693
With Project Off-Road Equipment (exhau	0.8134	10.7967	13.5823	0.0233	0.3115	0.3032	2062.2565

Onsite Emissions Summary

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Onsite Haul Trucks 400,000 Tons/Year	0.768	1.03	1.047		0.026	0.0258	
Onsite Haul Trucks 700,000 Tons/Year	1.344	1.8025	1.83225		0.0455	0.04515	
Onsite Haul Trucks 800,000 Tons/Year	1.536	2.06	2.094		0.052	0.0516	
Onsite Haul Trucks 1,500,000 Tons/Year	2.88	3.8625	3.92625		0.0975	0.09675	
Onsite Haul Trucks 700,000 Tons/Year Mitigated	0.1693	0.6003	1.679		0.0042	0.004	

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Off Road Equipment 400,000 Tons/Year	0.1035	1.8050	2.3129	0.0061	0.0430	0.0430	536.10
Off Road Equipment 700,000 Tons/Year	0.1811	3.1588	4.0476	0.0106	0.0753	0.0753	938.17
Off Road Equipment 800,000 Tons/Year	0.2070	3.6100	4.6258	0.0121	0.0860	0.0860	1072.19
Off Road Equipment 1,500,000 Tons/Year	0.3881	6.7688	8.6734	0.0227	0.1613	0.1613	2010.36
Off Road Equipment 700,000 Tons/Year Mitigated	0.0920	1.0640	3.5180	0.0100	0.0110	0.0114	938.17

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Off Road Equipment with Haul Truck 400,000 Tons/Year	0.8715	2.8350	3.3599	0.0061	0.0690	0.0688	536.10
Off Road Equipment 700,000 Tons/Year	1.5251	4.9613	5.8798	0.0106	0.1208	0.1204	938.17
Off Road Equipment 800,000 Tons/Year	1.7430	5.6700	6.7198	0.0121	0.1380	0.1376	1072.19
Off Road Equipment 1,500,000 Tons/Year	3.2681	10.6313	12.5996	0.0227	0.2588	0.2580	2010.36
Off Road Equipment 700,000 Tons/Year Mitigated	0.2613	1.6643	5.1970	0.0100	0.0152	0.0154	938.17
Emission Reduction with Tier 4 Mitigation	1.2638	3.2970	0.6828	0.0006	0.1056	0.1050	0.0000

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Onsite Work Trucks 400,000 Tons/Year	0.01	0.19	0.074	0.074	0.002	0.00238	
Onsite Work Trucks 700,000 Tons/Year	0.0175	0.3325	0.1295	0.0002	0.0035	0.004165	
Onsite Work Trucks 800,000 Tons/Year	0.02	0.38	0.148	0.148	0.004	0.00476	
Onsite Work Trucks 1,500,000 Tons/Year	0.0375	0.7125	0.2775	0.1482	0.0075	0.008925	13.78
Onsite Work Trucks 700,000 Tons/Year Mitigated	0.0110	0.176	0.078	0.0002	0.0027	0.00238	

	Tons/Year						
	ROG	**NOX**	**CO**	**SO2**	**PM10**	**PM2.5**	**CO2e**
Water Trucks 400,000 Tons/Year	0.0330	0.3200	0.0940	0.0005	0.0070	0.0052	
Water Trucks 700,000 Tons/Year	0.0578	0.5600	0.1645	0.0009	0.0123	0.0091	
Water Trucks 800,000 Tons/Year	0.0660	0.6400	0.1880	0.0010	0.0140	0.0104	
Water Trucks 1,500,000 Tons/Year	0.1238	1.2000	0.3525	0.0021	0.0263	0.0195	
Water Trucks 700,000 Tons/Year Mitigated	0.0058	0.3148	0.0756	0.0009	0.0039	0.0020	
Work Trucks Reduction 2020-2025	0.0065	0.1565	0.0515	0.0000	0.0008	0.0018	
Water Trucks Reduction 2020-2025	0.0520	0.2452	0.0889	0.0000	0.0084	0.0071	
Off Road Equipment Tier 4							
Total Reduction Onsite Vehicles	**0.0585**	**0.4017**	**0.1404**	**0.0000**	**0.0092**	**0.0089**	

Fugitive Dust Summary	**PM10 400,000**	**PM10 700,000**	**PM10 800,000**	**PM10 1,500,000**
OnRoad Onsite Haul Trucks - Fugitive Dust Emissions	2.3812	4.1671	4.7624	8.9294
Offroad Trucks - Fugitive Dust Emissions	2.5857	4.5250	5.1715	9.6965
	4.9669	8.6921	9.9338	18.6260
Storage Piles - Fugitive Dust	0.1246	0.2181	0.2492	0.4673
Wind Erosion - Fugitive Dust	0.2221	0.3887	0.4443	0.8330
Truck Loading - Fugitive Dust	0.0400	0.0700	0.0800	0.1500
	0.3867	**0.6768**	**0.7735**	**1.4502**
Blasting	0.0135	0.0236	0.0269	0.0505
	0.4002	**0.7003**	**0.8004**	**1.5007**
Permitted Sources	0.3059	0.5352	0.6117	1.1469

Appendix A: CalEEMod Output

Deer Creek Mine Employee Commute Travel

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Mobile only run

Vehicle Trips - 30 trips/day commute only

Fleet Mix - Passenger vehicles only

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	PhaseEndDate	11/5/2019	10/30/2019
tblFleetMix	HHD	0.08	0.00
tblFleetMix	LDA	0.51	0.59
tblFleetMix	LDT1	0.03	0.04
tblFleetMix	LDT2	0.17	0.20
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.7980e-003	0.00
tblFleetMix	MCY	4.4020e-003	0.00
tblFleetMix	MDV	0.15	0.17
tblFleetMix	MH	8.1800e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.8190e-003	0.00
tblFleetMix	SBUS	1.1550e-003	0.00
tblFleetMix	UBUS	1.3710e-003	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	ST_TR	1.50	27.00
tblVehicleTrips	SU_TR	1.50	27.00
tblVehicleTrips	WD_TR	1.50	27.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	7.0900e-003	9.2000e-004	9.2000e-004	0.0000	0.0000	6.0000e-005	6.0000e-005	0.0000	6.0000e-005	6.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Maximum	**7.0900e-003**	**9.2000e-004**	**9.2000e-004**	**0.0000**	**0.0000**	**6.0000e-005**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	7.0900e-003	9.2000e-004	9.2000e-004	0.0000	0.0000	6.0000e-005	6.0000e-005	0.0000	6.0000e-005	6.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Maximum	**7.0900e-003**	**9.2000e-004**	**9.2000e-004**	**0.0000**	**0.0000**	**6.0000e-005**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	9.3000e-003	0.0181	0.1701	5.0000e-004	0.0496	2.8000e-004	0.0499	0.0132	2.6000e-004	0.0134	0.0000	45.3214	45.3214	1.1600e-003	0.0000	45.3504
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.0140**	**0.0192**	**0.1710**	**5.1000e-004**	**0.0496**	**3.6000e-004**	**0.0500**	**0.0132**	**3.4000e-004**	**0.0135**	**0.3251**	**49.6440**	**49.9691**	**0.0237**	**2.2000e-004**	**50.6295**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	9.3000e-003	0.0181	0.1701	5.0000e-004	0.0496	2.8000e-004	0.0499	0.0132	2.6000e-004	0.0134	0.0000	45.3214	45.3214	1.1600e-003	0.0000	45.3504
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.0140**	**0.0192**	**0.1710**	**5.1000e-004**	**0.0496**	**3.6000e-004**	**0.0500**	**0.0132**	**3.4000e-004**	**0.0135**	**0.3251**	**49.6440**	**49.9691**	**0.0237**	**2.2000e-004**	**50.6295**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	10/30/2019	10/30/2019	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,500; Non-Residential Outdoor: 500; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.9500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3000e-004	9.2000e-004	9.2000e-004	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total	**7.0800e-003**	**9.2000e-004**	**9.2000e-004**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.9500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3000e-004	9.2000e-004	9.2000e-004	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total	**7.0800e-003**	**9.2000e-004**	**9.2000e-004**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	9.3000e-003	0.0181	0.1701	5.0000e-004	0.0496	2.8000e-004	0.0499	0.0132	2.6000e-004	0.0134	0.0000	45.3214	45.3214	1.1600e-003	0.0000	45.3504
Unmitigated	9.3000e-003	0.0181	0.1701	5.0000e-004	0.0496	2.8000e-004	0.0499	0.0132	2.6000e-004	0.0134	0.0000	45.3214	45.3214	1.1600e-003	0.0000	45.3504

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	27.00	27.00	27.00	134,749	134,749
Total	27.00	27.00	27.00	134,749	134,749

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	14.70	6.60	6.60	100.00	0.00	0.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.585543	0.039930	0.197768	0.172357	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
NaturalGas Mitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
NaturalGas Unmitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.4721	7.5500e-003	1.8000e-004	0.7149
Unmitigated	0.4721	7.5500e-003	1.8000e-004	0.7149

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2517	0.0149	0.0000	0.6236
Unmitigated	0.2517	0.0149	0.0000	0.6236

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Deer Creek Mine Employee Commute Travel

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Mobile only run

Vehicle Trips - 30 trips/day commute only

Fleet Mix - Passenger vehicles only

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	PhaseEndDate	11/5/2019	10/30/2019
tblFleetMix	HHD	0.08	0.00
tblFleetMix	LDA	0.51	0.59
tblFleetMix	LDT1	0.03	0.04
tblFleetMix	LDT2	0.17	0.20
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.7980e-003	0.00
tblFleetMix	MCY	4.4020e-003	0.00
tblFleetMix	MDV	0.15	0.17
tblFleetMix	MH	8.1800e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.8190e-003	0.00
tblFleetMix	SBUS	1.1550e-003	0.00
tblFleetMix	UBUS	1.3710e-003	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	ST_TR	1.50	30.00
tblVehicleTrips	SU_TR	1.50	30.00
tblVehicleTrips	WD_TR	1.50	30.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	7.0900e-003	9.2000e-004	9.2000e-004	0.0000	0.0000	6.0000e-005	6.0000e-005	0.0000	6.0000e-005	6.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Maximum	**7.0900e-003**	**9.2000e-004**	**9.2000e-004**	**0.0000**	**0.0000**	**6.0000e-005**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	7.0900e-003	9.2000e-004	9.2000e-004	0.0000	0.0000	6.0000e-005	6.0000e-005	0.0000	6.0000e-005	6.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Maximum	**7.0900e-003**	**9.2000e-004**	**9.2000e-004**	**0.0000**	**0.0000**	**6.0000e-005**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	0.0103	0.0202	0.1890	5.6000e-004	0.0551	3.1000e-004	0.0554	0.0146	2.9000e-004	0.0149	0.0000	50.3571	50.3571	1.2900e-003	0.0000	50.3893
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.0151**	**0.0212**	**0.1899**	**5.7000e-004**	**0.0551**	**3.9000e-004**	**0.0555**	**0.0146**	**3.7000e-004**	**0.0150**	**0.3251**	**54.6798**	**55.0048**	**0.0239**	**2.2000e-004**	**55.6684**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	0.0103	0.0202	0.1890	5.6000e-004	0.0551	3.1000e-004	0.0554	0.0146	2.9000e-004	0.0149	0.0000	50.3571	50.3571	1.2900e-003	0.0000	50.3893
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.0151**	**0.0212**	**0.1899**	**5.7000e-004**	**0.0551**	**3.9000e-004**	**0.0555**	**0.0146**	**3.7000e-004**	**0.0150**	**0.3251**	**54.6798**	**55.0048**	**0.0239**	**2.2000e-004**	**55.6684**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	10/30/2019	10/30/2019	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,500; Non-Residential Outdoor: 500; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	1	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.9500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3000e-004	9.2000e-004	9.2000e-004	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total	**7.0800e-003**	**9.2000e-004**	**9.2000e-004**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Architectural Coating - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	6.9500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3000e-004	9.2000e-004	9.2000e-004	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.1277	0.1277	1.0000e-005	0.0000	0.1279
Total	**7.0800e-003**	**9.2000e-004**	**9.2000e-004**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.1277**	**0.1277**	**1.0000e-005**	**0.0000**	**0.1279**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0103	0.0202	0.1890	5.6000e-004	0.0551	3.1000e-004	0.0554	0.0146	2.9000e-004	0.0149	0.0000	50.3571	50.3571	1.2900e-003	0.0000	50.3893
Unmitigated	0.0103	0.0202	0.1890	5.6000e-004	0.0551	3.1000e-004	0.0554	0.0146	2.9000e-004	0.0149	0.0000	50.3571	50.3571	1.2900e-003	0.0000	50.3893

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	30.00	30.00	30.00	149,721	149,721
Total	30.00	30.00	30.00	149,721	149,721

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	14.70	6.60	6.60	100.00	0.00	0.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.585543	0.039930	0.197768	0.172357	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
NaturalGas Mitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
NaturalGas Unmitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.4721	7.5500e-003	1.8000e-004	0.7149
Unmitigated	0.4721	7.5500e-003	1.8000e-004	0.7149

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2517	0.0149	0.0000	0.6236
Unmitigated	0.2517	0.0149	0.0000	0.6236

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Deer Creek Mine Expansion Haul Trucks Baseline Annual

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Truck Only Run

Off-road Equipment - Truck Only

Vehicle Trips - Annual round trips 64,000 260 days x 246 trips/day

Fleet Mix - Haul Truck Only Run

Deer Creek Mine Expansion Haul Trucks Baseline Annual - Tulare County, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	1.00
tblFleetMix	HHD	0.08	1.00
tblFleetMix	LDA	0.51	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.7980e-003	0.00
tblFleetMix	MCY	4.4020e-003	0.00
tblFleetMix	MDV	0.15	0.00
tblFleetMix	MH	8.1800e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.8190e-003	0.00
tblFleetMix	SBUS	1.1550e-003	0.00
tblFleetMix	UBUS	1.3710e-003	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblVehicleTrips	CC_TL	7.30	25.00
tblVehicleTrips	CNW_TL	7.30	25.00
tblVehicleTrips	CW_TL	9.50	25.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.50	0.00
tblVehicleTrips	SU_TR	1.50	0.00
tblVehicleTrips	WD_TR	1.50	246.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	3.0000e-004	2.5500e-003	2.1200e-003	0.0000	3.8000e-004	1.5000e-004	5.3000e-004	2.1000e-004	1.5000e-004	3.6000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Maximum	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	3.0000e-004	2.5500e-003	2.1200e-003	0.0000	3.8000e-004	1.5000e-004	5.3000e-004	2.1000e-004	1.5000e-004	3.6000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Maximum	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-10-2019**	**8-9-2019**	0.0061	0.0061
		Highest	0.0061	0.0061

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	0.3040	10.3258	1.7460	0.0307	0.6810	0.0378	0.7188	0.1872	0.0362	0.2234	0.0000	2,928.1911	2,928.1911	0.0866	0.0000	2,930.3560
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.3087**	**10.3268**	**1.7469**	**0.0308**	**0.6810**	**0.0379**	**0.7189**	**0.1872**	**0.0363**	**0.2235**	**0.3251**	**2,932.5137**	**2,932.8388**	**0.1092**	**2.2000e-004**	**2,935.6351**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	0.3040	10.3258	1.7460	0.0307	0.6810	0.0378	0.7188	0.1872	0.0362	0.2234	0.0000	2,928.1911	2,928.1911	0.0866	0.0000	2,930.3560
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.3087**	**10.3268**	**1.7469**	**0.0308**	**0.6810**	**0.0379**	**0.7189**	**0.1872**	**0.0363**	**0.2235**	**0.3251**	**2,932.5137**	**2,932.8388**	**0.1092**	**2.2000e-004**	**2,935.6351**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	5/25/2019	5/27/2019	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8000e-004	0.0000	3.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	2.5500e-003	2.1200e-003	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Total	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8000e-004	0.0000	3.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	2.5500e-003	2.1200e-003	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Total	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3040	10.3258	1.7460	0.0307	0.6810	0.0378	0.7188	0.1872	0.0362	0.2234	0.0000	2,928.1911	2,928.1911	0.0866	0.0000	2,930.3560
Unmitigated	0.3040	10.3258	1.7460	0.0307	0.6810	0.0378	0.7188	0.1872	0.0362	0.2234	0.0000	2,928.1911	2,928.1911	0.0866	0.0000	2,930.3560

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	246.00	0.00	0.00	1,599,000	1,599,000
Total	246.00	0.00	0.00	1,599,000	1,599,000

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	25.00	25.00	25.00	59.00	28.00	13.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
NaturalGas Mitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
NaturalGas Unmitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.4721	7.5500e-003	1.8000e-004	0.7149
Unmitigated	0.4721	7.5500e-003	1.8000e-004	0.7149

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2517	0.0149	0.0000	0.6236
Unmitigated	0.2517	0.0149	0.0000	0.6236

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Deer Creek Mine Expansion Haul Trucks Increase from Project Annual

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Truck Only Run

Off-road Equipment - Truck Only

Vehicle Trips - Annual trips 56,000 = 260 days x 215 trips/day

Fleet Mix - Haul Truck Only Run

Deer Creek Mine Expansion Haul Trucks Increase from Project Annual - Tulare County, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	1.00
tblFleetMix	HHD	0.08	1.00
tblFleetMix	LDA	0.51	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.7980e-003	0.00
tblFleetMix	MCY	4.4020e-003	0.00
tblFleetMix	MDV	0.15	0.00
tblFleetMix	MH	8.1800e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.8190e-003	0.00
tblFleetMix	SBUS	1.1550e-003	0.00
tblFleetMix	UBUS	1.3710e-003	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblVehicleTrips	CC_TL	7.30	25.00
tblVehicleTrips	CNW_TL	7.30	25.00
tblVehicleTrips	CW_TL	9.50	25.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.50	0.00
tblVehicleTrips	SU_TR	1.50	0.00
tblVehicleTrips	WD_TR	1.50	215.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	3.0000e-004	2.5500e-003	2.1200e-003	0.0000	3.8000e-004	1.5000e-004	5.3000e-004	2.1000e-004	1.5000e-004	3.6000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Maximum	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	3.0000e-004	2.5500e-003	2.1200e-003	0.0000	3.8000e-004	1.5000e-004	5.3000e-004	2.1000e-004	1.5000e-004	3.6000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Maximum	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-10-2019**	**8-9-2019**	0.0061	0.0061
		Highest	0.0061	0.0061

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	0.2657	9.0246	1.5260	0.0269	0.5952	0.0331	0.6282	0.1636	0.0316	0.1953	0.0000	2,559.1914	2,559.1914	0.0757	0.0000	2,561.0835
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.2704**	**9.0256**	**1.5269**	**0.0269**	**0.5952**	**0.0331**	**0.6283**	**0.1636**	**0.0317**	**0.1953**	**0.3251**	**2,563.5140**	**2,563.8391**	**0.0983**	**2.2000e-004**	**2,566.3626**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	0.2657	9.0246	1.5260	0.0269	0.5952	0.0331	0.6282	0.1636	0.0316	0.1953	0.0000	2,559.1914	2,559.1914	0.0757	0.0000	2,561.0835
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.2704**	**9.0256**	**1.5269**	**0.0269**	**0.5952**	**0.0331**	**0.6283**	**0.1636**	**0.0317**	**0.1953**	**0.3251**	**2,563.5140**	**2,563.8391**	**0.0983**	**2.2000e-004**	**2,566.3626**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	5/25/2019	5/27/2019	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8000e-004	0.0000	3.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	2.5500e-003	2.1200e-003	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Total	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8000e-004	0.0000	3.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	2.5500e-003	2.1200e-003	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Total	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2657	9.0246	1.5260	0.0269	0.5952	0.0331	0.6282	0.1636	0.0316	0.1953	0.0000	2,559.1914	2,559.1914	0.0757	0.0000	2,561.0835
Unmitigated	0.2657	9.0246	1.5260	0.0269	0.5952	0.0331	0.6282	0.1636	0.0316	0.1953	0.0000	2,559.1914	2,559.1914	0.0757	0.0000	2,561.0835

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	215.00	0.00	0.00	1,397,500	1,397,500
Total	215.00	0.00	0.00	1,397,500	1,397,500

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	25.00	25.00	25.00	59.00	28.00	13.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
NaturalGas Mitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
NaturalGas Unmitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.4721	7.5500e-003	1.8000e-004	0.7149
Unmitigated	0.4721	7.5500e-003	1.8000e-004	0.7149

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2517	0.0149	0.0000	0.6236
Unmitigated	0.2517	0.0149	0.0000	0.6236

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Deer Creek Mine Expansion Haul Trucks with Project Annual

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Truck Only Run

Off-road Equipment - Truck Only

Vehicle Trips - Annual trips 120,000 = 260 days x 462 trips/day

Fleet Mix - Haul Truck Only Run

Deer Creek Mine Expansion Haul Trucks with Project Annual - Tulare County, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	1.00
tblFleetMix	HHD	0.08	1.00
tblFleetMix	LDA	0.51	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.7980e-003	0.00
tblFleetMix	MCY	4.4020e-003	0.00
tblFleetMix	MDV	0.15	0.00
tblFleetMix	MH	8.1800e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.8190e-003	0.00
tblFleetMix	SBUS	1.1550e-003	0.00
tblFleetMix	UBUS	1.3710e-003	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblVehicleTrips	CC_TL	7.30	25.00
tblVehicleTrips	CNW_TL	7.30	25.00
tblVehicleTrips	CW_TL	9.50	25.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.50	0.00
tblVehicleTrips	SU_TR	1.50	0.00
tblVehicleTrips	WD_TR	1.50	462.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	3.0000e-004	2.5500e-003	2.1200e-003	0.0000	3.8000e-004	1.5000e-004	5.3000e-004	2.1000e-004	1.5000e-004	3.6000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Maximum	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	3.0000e-004	2.5500e-003	2.1200e-003	0.0000	3.8000e-004	1.5000e-004	5.3000e-004	2.1000e-004	1.5000e-004	3.6000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Maximum	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-10-2019**	**8-9-2019**	0.0061	0.0061
		Highest	0.0061	0.0061

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	0.5709	19.3923	3.2791	0.0577	1.2789	0.0711	1.3499	0.3516	0.0680	0.4196	0.0000	5,499.2857	5,499.2857	0.1626	0.0000	5,503.3515
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.5756**	**19.3933**	**3.2800**	**0.0578**	**1.2789**	**0.0711**	**1.3500**	**0.3516**	**0.0681**	**0.4197**	**0.3251**	**5,503.6083**	**5,503.9334**	**0.1852**	**2.2000e-004**	**5,508.6306**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	0.5709	19.3923	3.2791	0.0577	1.2789	0.0711	1.3499	0.3516	0.0680	0.4196	0.0000	5,499.2857	5,499.2857	0.1626	0.0000	5,503.3515
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.5756**	**19.3933**	**3.2800**	**0.0578**	**1.2789**	**0.0711**	**1.3500**	**0.3516**	**0.0681**	**0.4197**	**0.3251**	**5,503.6083**	**5,503.9334**	**0.1852**	**2.2000e-004**	**5,508.6306**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	5/25/2019	5/27/2019	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8000e-004	0.0000	3.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	2.5500e-003	2.1200e-003	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Total	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8000e-004	0.0000	3.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	2.5500e-003	2.1200e-003	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Total	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5709	19.3923	3.2791	0.0577	1.2789	0.0711	1.3499	0.3516	0.0680	0.4196	0.0000	5,499.2857	5,499.2857	0.1626	0.0000	5,503.3515
Unmitigated	0.5709	19.3923	3.2791	0.0577	1.2789	0.0711	1.3499	0.3516	0.0680	0.4196	0.0000	5,499.2857	5,499.2857	0.1626	0.0000	5,503.3515

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	462.00	0.00	0.00	3,003,000	3,003,000
Total	462.00	0.00	0.00	3,003,000	3,003,000

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	25.00	25.00	25.00	59.00	28.00	13.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
NaturalGas Mitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
NaturalGas Unmitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.4721	7.5500e-003	1.8000e-004	0.7149
Unmitigated	0.4721	7.5500e-003	1.8000e-004	0.7149

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2517	0.0149	0.0000	0.6236
Unmitigated	0.2517	0.0149	0.0000	0.6236

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Deer Creek Mine Expansion Haul Trucks

Tulare County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	51
Climate Zone	3			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Truck Only Run

Off-road Equipment - Truck Only

Vehicle Trips - 28,000 trips/year over 5 days per week.

Fleet Mix - Haul Truck Only Run

Deer Creek Mine Expansion Haul Trucks - Tulare County, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	PhaseEndDate	5/28/2019	5/27/2019
tblFleetMix	HHD	0.08	1.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.3040e-003	0.00
tblFleetMix	MCY	4.0600e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	5.8700e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.8020e-003	0.00
tblFleetMix	SBUS	1.0580e-003	0.00
tblFleetMix	UBUS	1.1360e-003	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblVehicleTrips	CC_TL	7.30	25.00
tblVehicleTrips	CNW_TL	7.30	25.00
tblVehicleTrips	CW_TL	9.50	25.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.50	0.00
tblVehicleTrips	SU_TR	1.50	0.00
tblVehicleTrips	WD_TR	1.50	215.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	3.0000e-004	2.5500e-003	2.1200e-003	0.0000	3.8000e-004	1.5000e-004	5.3000e-004	2.1000e-004	1.5000e-004	3.6000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Maximum	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	3.0000e-004	2.5500e-003	2.1200e-003	0.0000	3.8000e-004	1.5000e-004	5.3000e-004	2.1000e-004	1.5000e-004	3.6000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Maximum	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-10-2019**	**8-9-2019**	0.0061	0.0061
		Highest	0.0061	0.0061

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	0.1580	4.8275	1.1221	0.0250	0.5954	9.4500e-003	0.6049	0.1637	9.0400e-003	0.1728	0.0000	2,382.6191	2,382.6191	0.0542	0.0000	2,383.9751
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.1627**	**4.8286**	**1.1229**	**0.0250**	**0.5954**	**9.5300e-003**	**0.6050**	**0.1637**	**9.1200e-003**	**0.1728**	**0.3251**	**2,386.9418**	**2,387.2669**	**0.0768**	**2.2000e-004**	**2,389.2542**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	3.9239	3.9239	1.4000e-004	4.0000e-005	3.9406
Mobile	0.1580	4.8275	1.1221	0.0250	0.5954	9.4500e-003	0.6049	0.1637	9.0400e-003	0.1728	0.0000	2,382.6191	2,382.6191	0.0542	0.0000	2,383.9751
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0734	0.3987	0.4721	7.5500e-003	1.8000e-004	0.7149
Total	**0.1627**	**4.8286**	**1.1229**	**0.0250**	**0.5954**	**9.5300e-003**	**0.6050**	**0.1637**	**9.1200e-003**	**0.1728**	**0.3251**	**2,386.9418**	**2,387.2669**	**0.0768**	**2.2000e-004**	**2,389.2542**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	5/25/2019	5/27/2019	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	2	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8000e-004	0.0000	3.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	2.5500e-003	2.1200e-003	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Total	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8000e-004	0.0000	3.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	2.5500e-003	2.1200e-003	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.3168	0.3168	3.0000e-005	0.0000	0.3176
Total	**3.0000e-004**	**2.5500e-003**	**2.1200e-003**	**0.0000**	**3.8000e-004**	**1.5000e-004**	**5.3000e-004**	**2.1000e-004**	**1.5000e-004**	**3.6000e-004**	**0.0000**	**0.3168**	**0.3168**	**3.0000e-005**	**0.0000**	**0.3176**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1580	4.8275	1.1221	0.0250	0.5954	9.4500e-003	0.6049	0.1637	9.0400e-003	0.1728	0.0000	2,382.6191	2,382.6191	0.0542	0.0000	2,383.9751
Unmitigated	0.1580	4.8275	1.1221	0.0250	0.5954	9.4500e-003	0.6049	0.1637	9.0400e-003	0.1728	0.0000	2,382.6191	2,382.6191	0.0542	0.0000	2,383.9751

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	215.00	0.00	0.00	1,397,500	1,397,500
Total	215.00	0.00	0.00	1,397,500	1,397,500

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Heavy Industry	25.00	25.00	25.00	59.00	28.00	13.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Heavy Industry	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.8102	2.8102	1.2000e-004	2.0000e-005	2.8203
NaturalGas Mitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
NaturalGas Unmitigated	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	20870	1.1000e-004	1.0200e-003	8.6000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1137	1.1137	2.0000e-005	2.0000e-005	1.1203
Total		**1.1000e-004**	**1.0200e-003**	**8.6000e-004**	**1.0000e-005**		**8.0000e-005**	**8.0000e-005**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**1.1137**	**1.1137**	**2.0000e-005**	**2.0000e-005**	**1.1203**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	8820	2.8102	1.2000e-004	2.0000e-005	2.8203
Total		**2.8102**	**1.2000e-004**	**2.0000e-005**	**2.8203**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	4.6000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	7.0000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.6100e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.4721	7.5500e-003	1.8000e-004	0.7149
Unmitigated	0.4721	7.5500e-003	1.8000e-004	0.7149

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	0.23125 / 0	0.4721	7.5500e-003	1.8000e-004	0.7149
Total		**0.4721**	**7.5500e-003**	**1.8000e-004**	**0.7149**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2517	0.0149	0.0000	0.6236
Unmitigated	0.2517	0.0149	0.0000	0.6236

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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Appendix B:
Criteria Pollutant Analysis and Health Risk Assessment

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Appendix B

Air Quality and Health Risk Model Output

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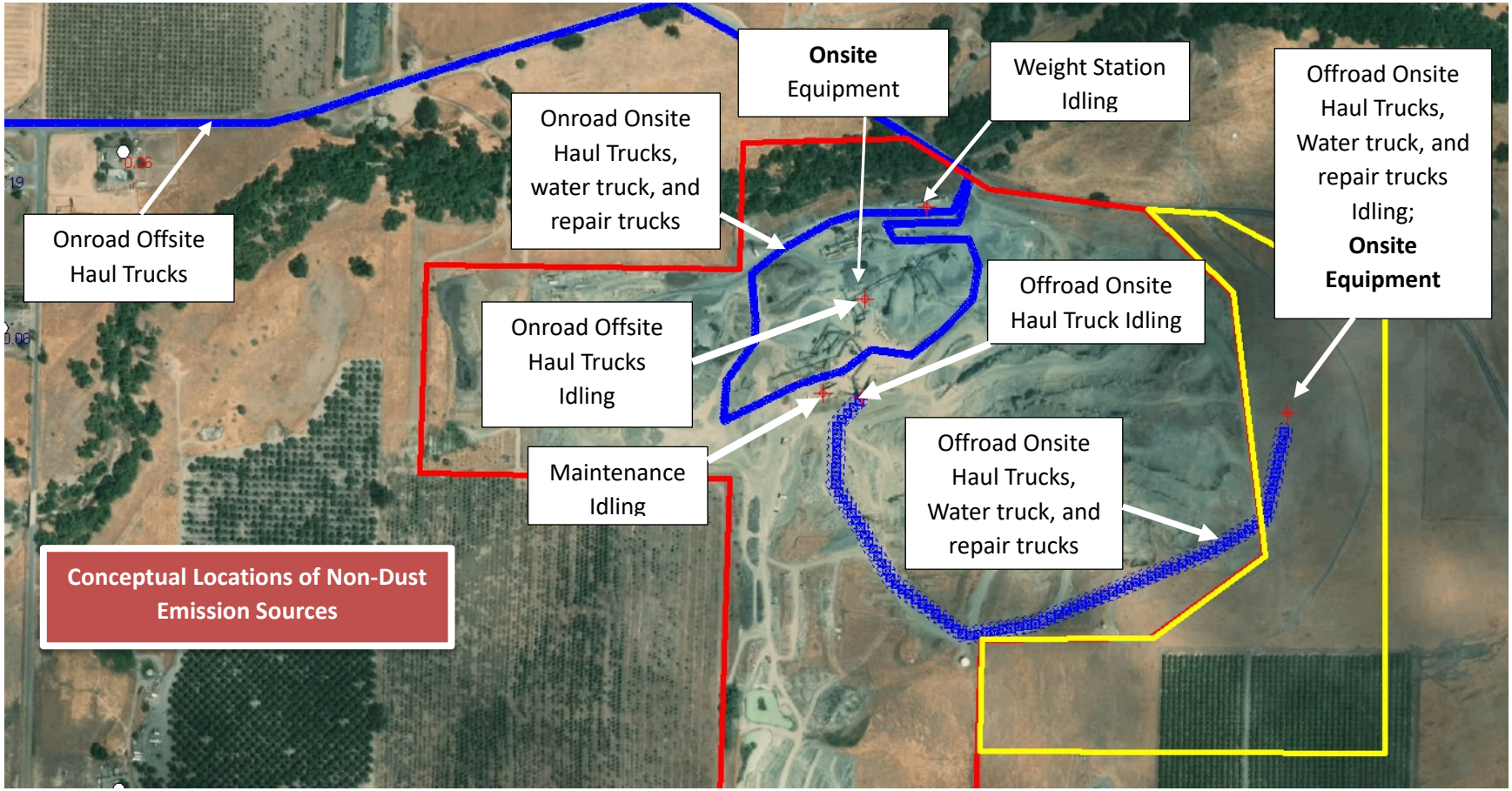
Onsite Equipment
Weight Station Idling
Offroad Onsite Haul Trucks, Water truck, and repair trucks Idling; Onsite Equipment
Onroad Onsite Haul Trucks, water truck, and repair trucks
Onroad Offsite Haul Trucks
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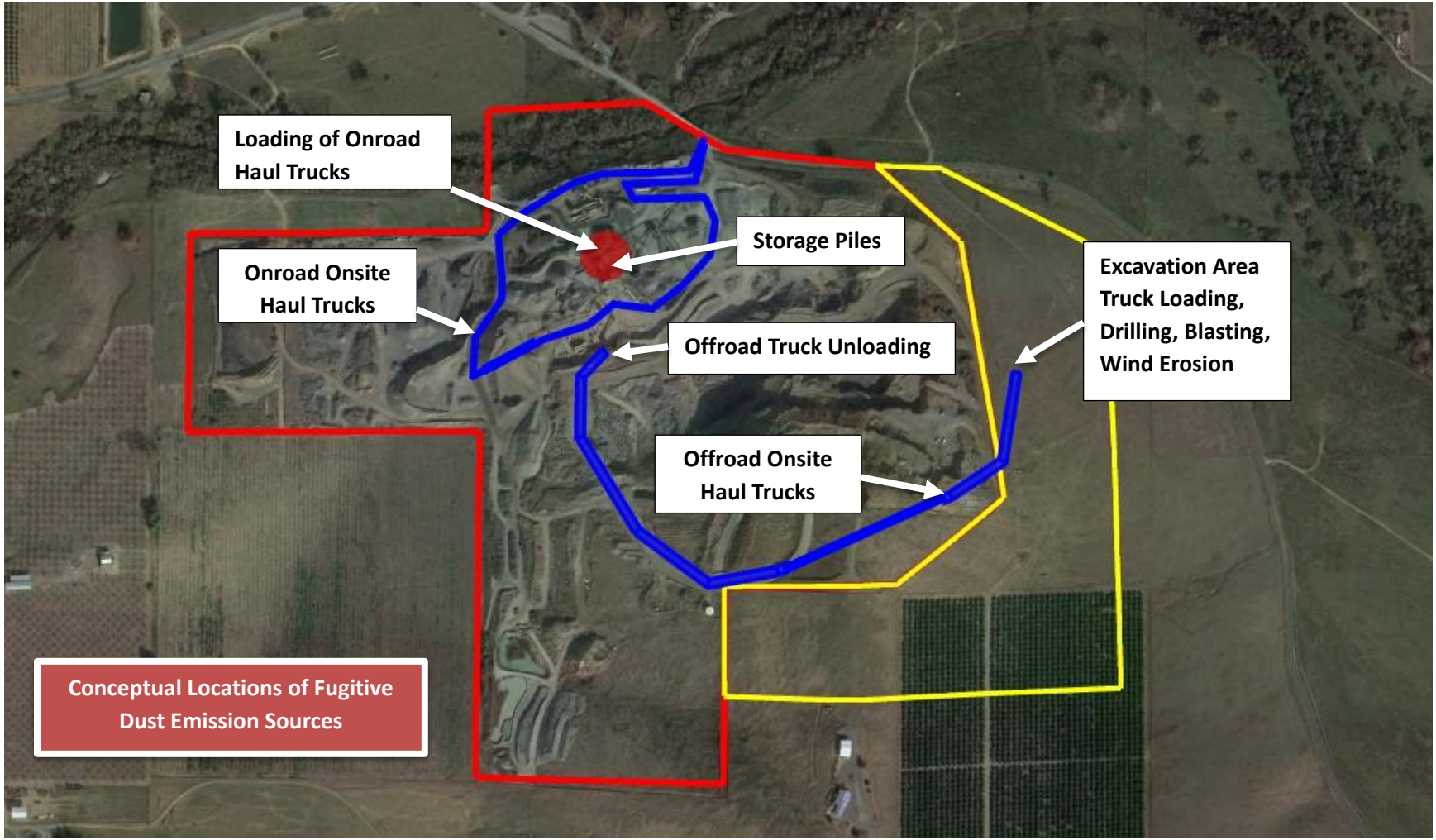
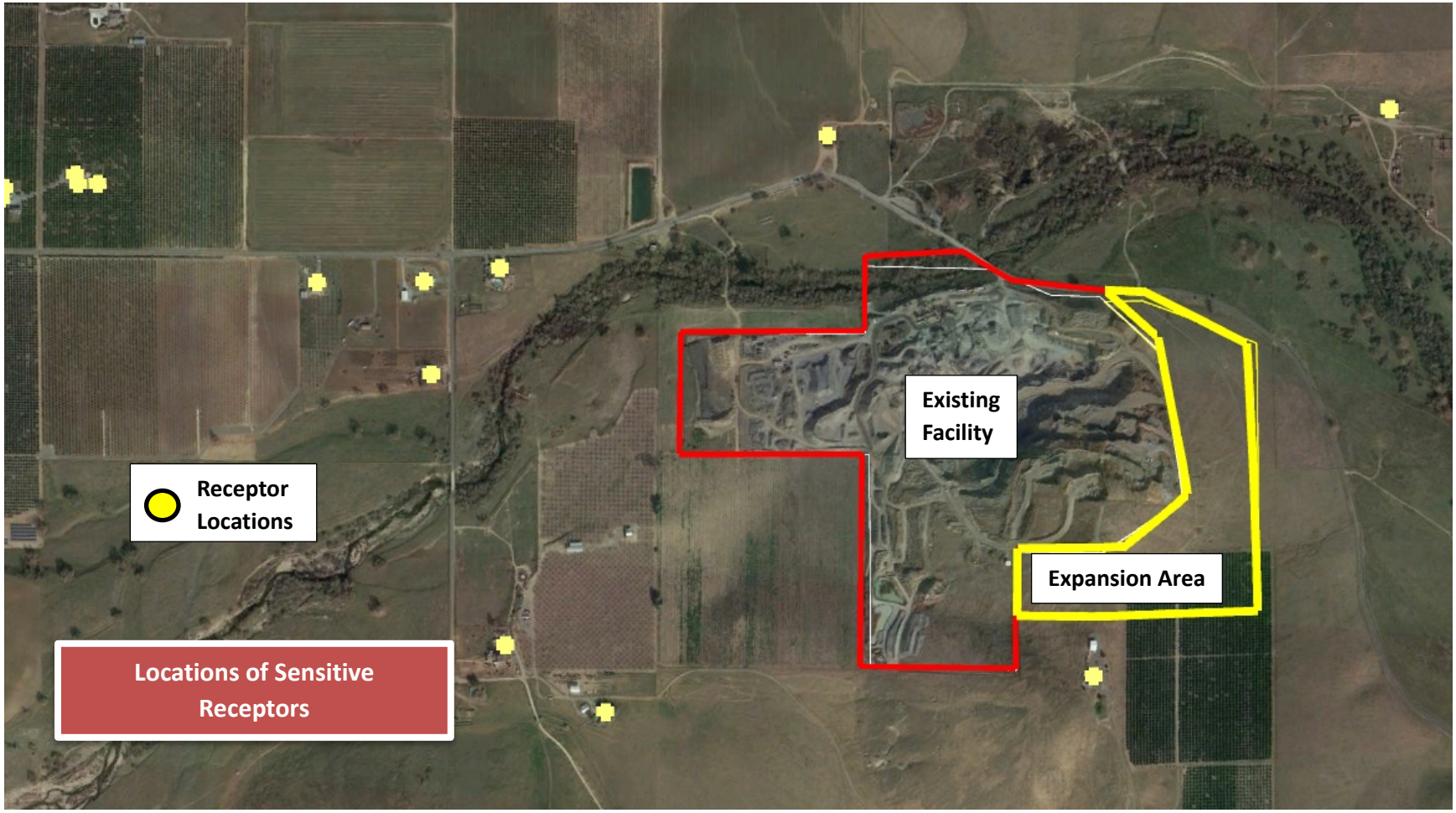
Offroad Onsite Haul Trucks, Water truck, and repair trucks
Conceptual Locations of Non-Dust Emission Sources


Loading of Onroad Haul Trucks
Storage Piles
Onroad Onsite Haul Trucks
Offroad Truck Unloading
Excavation Area Truck Loading, Drilling, Blasting, Wind Erosion
Offroad Onsite Haul Trucks
Conceptual Locations of Fugitive Dust Emission Sources


Existing Facility
Expansion Area
Receptor Locations
Locations of Sensitive Receptors

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Summary of Emissions **ONSITE ONLY**

Year: **2020**
Pollutant: **CO**

Source	**Annual Total Exhaust tons/year**
Drilling amd Blasting	6.347
Offroad Equipment	2.313
Water Trucks	0.094
Work Trucks -	0.074
OnRoad Onsite Haul Trucks -	0.442
Offroad Haul Trucks	1.047
Employee Commute	0.000
Unpaved Road Dust (fugitive dust)	0.000
Dust (loading, wind, storage piles, unpaved roads)	0.000
Permitted Sources	0.000
Total Project Emissions	10.317

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

AERMOD Emission Sources

Year: **2020**
Pollutant: **CO**
Annual Average Emissions

Source ID	Source Component	Annual Average Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Type
EOnOnHaul	Onroad, Onsite Haul Trucks, Exhaust	1.92E-03	Line-Volume	6.154E-03	Line Volune
	Water Trucks, Exhaust	6.33E-04		3.284E-03	
	Work Trucks.Exhaust	1.34E-04		4.278E-04	
	Total	**2.69E-03**		**9.866E-03**	
EOffHaul	Offroad Haul Trucks,Exhaust	3.472E-02	Line Volume	1.111E-01	Line Volume
	Water Trucks.Exhaust	6.326E-04		4.418E-03	
	Work Trucks,Exhaust	1.337E-04		4.278E-04	
	Total	**3.548E-02**		**1.159E-01**	
Iscale	Onroad, Onsite Haul Trucks, Idle (Scale @ Entrane/Scale@ Exit	**1.248E-02**	Point	**5.992E-02**	Point
Imaint	Maintenance Area Work Truck,Idle	1.598E-03	Point	5.114E-03	Point
	Maintenance Area Water Truck, Idle	1.484E-03		3.956E-03	
	Total	**3.082E-03**		**9.070E-03**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	6.242E-03	Point	1.997E-02	Point
	Onsite Equipment, Operations	5.626E-02		1.800E-01	
	Total	**6.250E-02**		**2.000E-01**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	7.091E-03	Point	2.269E-02	Point
	Excavation Area, Work Truck, Idle	1.598E-03		5.114E-03	
	Onsite Equipment, Operations	5.177E-02		1.657E-01	
	Blasting	2.965E-01		0.000E+00	
	Total	**3.569E-01**		**1.935E-01**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**7.091E-03**	Point	**2.269E-02**	Point

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Onroad Onsite Average Daily Haul Truck Emissions

Year: 2020
Pollutant: CO

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	*71*	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	3.350	g/mi in Tulare County for 2020 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**166.2**	grams/day
Daily Exhaust Emissions	**0.37**	pounds/day
Annual Exhaust Emissions	**1.923E-03**	grams/sec averaged over all hours of the year

Maximum Daily Onsite Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emissi **1.2**

Maximum Daily Emissions	199.38	grams/day
Maximum Daily Emissions	0.44	pounds/day
Maximum Daily Emissio	**6.154E-03**	**grams/sec**

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	71	trucks/day
EMCAC2017 Idling Emission Factor	30.444	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**1617.88**	g/day
Daily Idling Emissions	**3.56**	pounds/day
Annual Idling Emissions	**1.873E-02**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Maximum Daily Onsite Idling Emissions

Maximum Daily Emissions	1941.46	grams/day
Maximum DailyEmissions	4.28	pounds/day
Maximum Daily Emissio	**5.992E-02**	**grams/sec**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**1.923E-03**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**6.242E-03**	**grams/sec**
Material Loading	**6.242E-03**	**grams/sec**
Weight Scale @ Exit	**6.242E-03**	**grams/sec**

Emission Totals	**3.93**	**pounds/day**
	0.442	**tons/year**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**6.154E-03**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**1.997E-02**	**grams/sec**
Material Loading	**1.997E-02**	**grams/sec**
Weight Scale @ Exit	**1.997E-02**	**grams/sec**

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Offroad Haul Truck Daily Average Daily Emissions

Year: **2020**
Pollutant: **CO**

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year	
Number of Trucks	2	trucks	
Average Truck Speed	5	mph	
Increased Hours of Operation	***3.9***	hours/day	
Trip Distance	830	meters or	0.52 miles
Travel Time	0.103	hrs/trip	
Daily Trips	38	trips/day/truck	
	76	trips/day for 2 trucks	
CalEEMod Exhaust Emission Factor	2.60	g/hp-hr (Tier 3)	
Equipment Size	385.00	hp	
Load Factor	0.38		
Work Day	9	hours/day	

Daily Average Exhaust Emissions	2999.57	grams/day
Daily Average Exhaust Emissions	6.61	pounds/day
Annual Average Exhaust Emission	3.472E-02	grams/sec averaged over the entire year

Average Daily Osite Project Incremental Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	76	events
EMCAC2017 Idling Emission Factor	32.045	g/hr in Tulare County for 2020
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	1225.25	grams/day
Daily Average Idling Emissions	2.70	pounds/day
Annual Average Idling Emissions	1.418E-02	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	3.472E-02	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	7.091E-03	grams/sec
Offload area to crusher	7.091E-03	grams/sec

Emission Total:	**9.31**	**pounds/day**
	1.047	**tons/year**

Offroad Haul Truck Maximum Daily Emissions

Maximum Daily Onsite Exhaust Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emissions **1.2**

Increased hours of Operation 4.73 hours/day

Maximum Daily Exhaust Emissions	**3599.48**	**grams/day**
Maximum Daily Exhaust Emissions	**7.93**	**pounds/day**
Maximum Daily Exhaust Emissions	**########**	**grams/sec**

Maximum Daily Onsite Idling Emissions

Maximum Daily Idling Emissions	**1470.30**	**grams/day**
Maximum Daily Idling Emissions	**3.24**	**pounds/day**
Maximum Daily Idling Emissions	**########**	**grams/sec**

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	########	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	########	grams/sec
Offload area to crusher	########	grams/sec

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	Comments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.5	0.50	113	338	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	4.5	1.60	128	848	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	4.5	4.50	1,013	3,038	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.5	0.41	76	261	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.3	0.21	38	131	Gasoline 9,500 watt continuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	4.5	1.60	128	848	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	4.5	4.50	1,013	3,038	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	4.5	4.50	1,013	3,038	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	4.5	1.60	128	848	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	4.5	4.50	1,013	3,038	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	4.5	4.50	1,013	3,038	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	1.5	1.23	228	783	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	4.5	4.50	1,013	3,038	
11	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	4.5	4.50	1,013	3,038	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	2.0	0.22	6	106	Limited Use
				4572.1			21,543					9,957	31,499	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	400,000
Increase Fraction	0.5

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	CO g/bhp-hr	Load Factor	Increased Hours/Year	HP x CO Factor	Weighted Avg CO/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	0	6.9	0.44	113	2,070	0.08	102,465		0.34
2	HITACHI	EX700H Excavator	1991	450	0	6.9	0.38	128	3,105	0.09	151,027		0.50
3	CAT	CAT 980G Loader	2001	300	2	2.6	0.36	1,013	780	0.26	284,310		0.35
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	4.1	0.31	76	197	0.03	4,640		0.01
5	BOBCAT	250 WELDER	2008	12.5	3	4.1	0.45	38	51	0.02	877		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	0	0.38	1,013	0	0.00	0		0.00
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	2.6	0.38	128	1,180	0.03	57,415		0.07
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	3.7	0.37	1,013	247	0.38	92,592		0.16
9	GENIE	10,000 LB LIFT	2007	82	2	3.7	0.2	1,013	303	0.38	61,439		0.11
10	KOMATSU	ROCK TRUCK	2010	385	3	0	0.38	1,013	0	0.00	0		0.00
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	2.6	0.38	128	512	0.03	24,913		0.03
12	CAT	980H WHEEL LOADER	2007	355	3	2.6	0.36	1,013	923	0.26	336,434		0.42
13	CAT	980M WHEEL LOADER	2015	378	4	2.2	0.36	1,013	832	0.22	303,118		0.32
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	2.6	0.38	228	455	0.06	39,450		0.05
15	BOBCAT	SKID STEER S570	2017	66.8	4	3.7	0.37	1,013	247	0.38	92,592		0.16
16	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	2.6	0.5	1,013	1,084	0.26	548,876		0.68
17	GROVE	RT74 CRANE	1988	200	0	6.9	0.29	0	1,380	0.00	0		0.00
				4272.1		**57.8**		**9,951**	**13,367**	**2.49**	**2,100,148**		**3.19**
Fleet Average for ARB Offroad Fleet Reg Compliance									3.13		**Trucks**		

	Annual CO Emissions (grams/year)	Annual CO Emissions (pounds/year)	Daily CO Emissions (pounds/day)	Annual Average CO Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	1,093,752	2409.14	10.71	5.626E-02
Equipment Operating at the haul truck location (highliighted in blue)	1,006,397	2216.73	9.85	5.177E-02
Total (based on increased number of project hours)	2,100,148	4625.88	20.56	1.080E-01
		2.3129	**tons/year**	

Factor to Convert Annual Daily Average to Maxximum DailyEmissons	1.2	
Hours of Operation	9	hours/day

	Maximum Daily CO Emissions (pounds/day)	Maximum Daily CO Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	12.85	1.800E-01
Equipment Operating at the haul truck location (highliighted in blue)	11.82	1.657E-01
Total (based on increased number of project hours)	24.67	3.457E-01

Deer Creek Mine Expansion - Tulare County

2020 Project Development @ 400,000 tons/year

Year: **2020**
Pollutant: **CO**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	*4*	2	1	2	*4*	8.0	80.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.

Daily Operations 9 hours

Emission Factor to Convert Annual Daily Average Emissions' to Maximu 1.2

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 3.1195 g/mi in Tulare County for 2020 (average from 5 to 15 mph)

Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)

Daily Average Emissions	249.56	grams/day
Daily Average Emissions	0.55	pounds/day
Annual Average Emissions	2.888E-03	grams/sec

Daily Maximum Onsite Exhaust Emissions

Maximum Daily Exhaust Emissions	299.5	grams/day
Maximum Daily Exhaust Emissions	0.660	pounds/day
Maximum Daily Exhaust Emissions	7.703E-03	grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)

Emission Factor g/mile T7 Construction	32.0451	g/hr in Tulare County for 2020
Daily Average Emissions	128.180	grams/day
DailyAverage Emissions	0.282	pounds/day
Annual Average Emissions	1.484E-03	grams/sec averaged over all hours of the year

Average Daily Onsite Idle Emissions

Maximum Daily Idling Emissions	153.82	grams/day
Maximum Daily Idling Emissions	0.34	pounds/day
Maximum Daily Idling Emissions	3.956E-03	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	6.326E-04	grams/sec
Travel emissions along the Onroad onsite haul truck route	8.510E-04	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions :	1.484E-03	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad truck route and 1 truck covers the onroad haul truck toure

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Exhaust Emissions Allocated along each route

Travel emissions along the offroad haul truck route	3.284E-03	grams/sec
Travel emissions along the Onroad onsite haul truck route	4.418E-03	grams/sec

Idling Emissions
Assumption: 1 idling location at the maintenance building

Emissions :	3.956E-03	grams/sec

Emission Totals	**0.8320**	**pounds/day**
	0.094	**tons/year**

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Year:	**2020**
Pollutant:	**CO**

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	114		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	***1,200,000***	114	blasts/yr
Increased Blasts from Project/Yr		38	

Blasting Emission Factors with ANFO	**CO (lbs/ton)**
	67

Average Daily Emission Calculations

	CO Emissions (lbs/year)	CO Emissions (tons/Yr)	CO Emissions (pounds/day)	Annual Average CO Emissions (grams/sec)	Maximum Daily Emissions	
Net Increase from Project	12695	**6.35**	56.42	2.965E-01	0	no change from the base case on a daily nbasis

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explosives)
5 tons of ANFO/blast

Emission Allocation

All blasting emissions will be represented as a point source at the excavation area.

Deer Creek Mine Expansion - Tulare County

2020 Project Development @ 400,000 tons/year

Average Daily Onsite Emission Estimates for Work Vehicles

Year: **2020**
Pollutant: **CO**

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***1.6***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Factor to Convert Annual Average Daily Emissions to Maximum Daily Emis: 1.2

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	6.4	miles/day
EMFAC2017 Exhaust Emission Factor	2.424	g/mile
Averge Daily Exhaust Emissions	15.51	g/day
Averge Daily Exhaust Emissions	0.034	pounds/day
Annual Average Exhaust Emissions	1.796E-04	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	26.30	g/hr
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	184.10	grams/day
Average Daily Idling Emissions	0.406	pounds/day
Annual Average Idling Emissoins	2.131E-03	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT1

Maximum Daily Exhaust Emissions	18.618	grams/day
Maximum Daily Exhaust Emissions	0.041	pounds/day
Maximum Daily Exhaust Emissions	5.746E-04	grams/sec
Maximum Daily Idling Emissions	220.920	grams/day
Maximum Daily Idling Emissions	0.487	pounds/day
Maximum Daily Idling Emissions	6.819E-03	grams/sec

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	3.2	miles/day
EMFAC2017 Exhaust Emission Factor	2.371	g/mile
Averge Daily Exhaust Emissions	7.59	g/day
Averge Daily Exhaust Emissions	0.017	pounds/day
Annual Average Exhaust Emissions	8.780E-05	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	26.30	g/hr
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	92.05	grams/day
Average Daily Idling Emissions	0.203	pounds/day
Annual Average Idling Emissoins	1.065E-03	g/sec averaged over the entire year
Total Emissions	0.659	

Maximum Daily Repair Truck Onsite Emissions - LHDT2

Maximum Daily Exhaust Emissions	9.103	grams/day
Maximum Daily Exhaust Emissions	0.0201	pounds/day
Maximum Daily Exhaust Emissions	2.810E-04	grams/sec
Maximum Daily Idling Emissions	110.460	grams/day
Maximum Daily Idling Emissions	0.2433	pounds/day
Maximum Daily Idling Emissions	3.409E-03	grams/sec

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	1.337E-04	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	1.337E-04	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area an	1.598E-03	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	1.598E-03	grams/sec

Emission Totals	**0.659**	**pounds/day**
	0.074	**tons/year**

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Maximum Daily Exhaust Emissons along onroad-offroad haul truck route:	4.278E-04	grams/sec
Maximum Daily Exhaust Emissons along offroad haul truck route:	4.278E-04	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area	5.114E-03	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	5.114E-03	grams/sec

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: TULARE
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	CO_RUNEX
TULARE	2020	T7 tractor	Aggregated	5	DSL	4.5323
TULARE	2020	T7 tractor	Aggregated	10	DSL	3.3675
TULARE	2020	T7 tractor	Aggregated	15	DSL	2.1496
TULARE	2020	T7 tractor	Aggregated	20	DSL	1.4763
TULARE	2020	T7 tractor	Aggregated	25	DSL	1.1541

Average Emission Factors (g/mile) 5 mph to 15 mph

	CO_RUNEX
T7 tractor	3.3498

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	NOx IDLEX emission_rate
2020	Annual	Tulare (SJV)	T7 tractor	Dsl	NOx	30.444

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	CO_RUNEX
TULARE	2020	T7 single construction	Aggregated	5	DSL	4.137
TULARE	2020	T7 single construction	Aggregated	10	DSL	3.172
TULARE	2020	T7 single construction	Aggregated	15	DSL	2.049

Average (5-15mph)

CO_RUNEX
3.120

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	CO_IDLEX
2020	Annual	Tulare (SJV)	T7 Single Construction	Dsl	IDLEX	32.045

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	CO_RUNEX
TULARE	2020	LHD1	Aggregated	5	DSL	3.332
TULARE	2020	LHD1	Aggregated	10	DSL	2.425
TULARE	2020	LHD1	Aggregated	15	DSL	1.515
					Average 5-15mpl	2.424
TULARE	2020	LHD2	Aggregated	5	DSL	3.278
TULARE	2020	LHD2	Aggregated	10	DSL	2.400
TULARE	2020	LHD2	Aggregated	15	DSL	1.434
					Average 5-15mpl	2.371

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	CO_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	26.30
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	26.30

Deer Creek Mine Expansion - Tulare County

Project Development @ 400,000 tons/year

Summary of Emissions

Year: **2020**
Pollutant: **NOx**

Source	Annual Total Exhaust tons/year
Drilling amd Blasting	1.611
Offroad Equipment	1.805
Water Trucks	0.317
Work Trucks -	0.193
OnRoad Onsite Haul Trucks -	0.609
Offroad Haul Trucks	1.029
Employee Commute	0.000
Unpaved Road Dust (fugitive dust)	0.000
Dust (loading, wind, storage piles, unpaved roads)	0.000
Permitted Sources	0.000
Total Project Emissions	5.563

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year
AERMOD Emission Sources

Year: 2020
Pollutant: NOx
Annual Average Emissions

Source ID	Source Component	Annual Average Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Type
EOnOnHaul	Onroad, Onsite Haul Trucks, Exhaust	7.74E-03	Line-Volume	2.476E-02	Line Volune
	Water Trucks, Exhaust	7.62E-04		1.480E-02	
	Work Trucks.Exhaust	1.51E-04		4.830E-04	
	Total	**8.65E-03**		**4.004E-02**	
EOffHaul	Offroad Haul Trucks,Exhaust	3.098E-02	Line Volume	9.913E-02	Line Volume
	Water Trucks.Exhaust	7.621E-04		1.991E-02	
	Work Trucks,Exhaust	1.509E-04		4.830E-04	
	Total	**3.189E-02**		**1.195E-01**	
Iscale	Onroad, Onsite Haul Trucks, Idle (Scale @ Entrane/Scale@ Exit	**1.617E-02**	Point	**1.140E-04**	Point
Imaint	Maintenance Area Work Truck,Idle	4.362E-03	Point	1.396E-02	Point
	Maintenance Area Water Truck, Idle	1.787E-03		4.766E-03	
	Total	**6.150E-03**		**1.873E-02**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	8.084E-03	Point	5.698E-05	Point
	Onsite Equipment, Operations	4.043E-02		1.294E-01	
	Total	**4.852E-02**		**1.294E-01**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	8.543E-03	Point	2.734E-02	Point
	Excavation Area, Work Truck, Idle	4.362E-03		1.396E-02	
	Onsite Equipment, Operations	4.386E-02		1.404E-01	
	Blasting	7.522E-02		0.000E+00	
	Total	**1.320E-01**		**1.817E-01**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**8.543E-03**	point	**2.734E-02**	Point

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Onroad Onsite Average Daily Haul Truck Emissions

Year: 2020
Pollutant: NOx

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	***71***	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	13.478	g/mi in Tulare County for 2020 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**668.5**	grams/day
Daily Exhaust Emissions	**1.47**	pounds/day
Annual Exhaust Emissions	**7.737E-03**	grams/sec averaged over all hours of the year

Maximum Daily Onsite Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emissions 1.2

Maximum Daily Emissions	802.21	grams/day
Maximum Daily Emissions	1.77	pounds/day
Maximum Daily Emissio	**2.476E-02**	**grams/sec**

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	71	trucks/day
EMCAC2017 Idling Emission Factor	39.428	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**2095.31**	g/day
Daily Idling Emissions	**4.62**	pounds/day
Annual Idling Emissions	**2.425E-02**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Maximum Daily Onsite Idling Emissions

Maximum Daily Emissions	2514.38	grams/day
Maximum DailyEmissions	5.54	grams/day
Maximum Daily Emissio	**1.709E-04**	**grams/sec**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**7.737E-03**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**8.084E-03**	**grams/sec**
Material Loading	**8.084E-03**	**grams/sec**
Weight Scale @ Exit	**8.084E-03**	**grams/sec**

Emission Total	**6.09**	**pounds/day**
	0.61	**tons/year**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**2.476E-02**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**5.698E-05**	**grams/sec**
Material Loading	**5.698E-05**	**grams/sec**
Weight Scale @ Exit	**5.698E-05**	**grams/sec**

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Offroad Haul Truck Daily Average Daily Emissions

Year: **2020**
Pollutant: **NOx**

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year	
Number of Trucks	2	trucks	
Average Truck Speed	5	mph	
Increased Hours of Operation	***3.9***	hours/day	
Trip Distance	830	meters or	0.52 miles
Travel Time	0.103	hrs/trip	
Daily Trips	38	trips/day/truck	
	76	trips/day for 2 trucks	
CalEEMod Exhaust Emission Factor	2.32	g/hp-hr (Tier 3)	
Equipment Size	385.00	hp	
Load Factor	0.38		
Work Day	9	hours/day	

Daily Average Exhaust Emission	2676.54	grams/day
Daily Average Exhaust Emission	5.90	pounds/day
Annual Average Exhaust Emissi	3.098E-02	grams/sec averaged over the entire year

Average Daily Osite Project Incremental Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	76	events
EMCAC2017 Idling Emission Factor	38.607	g/hr in Tulare County for 2020
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	1476.15	grams/day
Daily Average Idling Emissions	3.25	pounds/day
Annual Average Idling Emission	1.709E-02	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	3.098E-02	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	8.543E-03	grams/sec
Offload area to crusher	8.543E-03	grams/sec

Emission Tota	**9.15**	**pounds/day**
	1.03	**tons/year**

Offroad Haul Truck Maximum Daily Emissions

Maximum Daily Onsite Exhaust Emissions

Factor to Convert Average Daily Emissions to Maximum Daily En **1.2**

Increased hours of Operation 4.73 hours/day

Maximum Daily Exhaust Emissions	**3211.85**	**grams/day**
Maximum Daily Exhaust Emissions	**7.07**	**pounds/day**
Maximum Daily Exhaust Emissions	**9.913E-02**	**grams/sec**

Maximum Daily Onsite Idling Emissions

Maximum Daily Idling Emissions	**1771.38**	**grams/day**
Maximum Daily Idling Emissions	**3.90**	**pounds/day**
Maximum Daily Idling Emissions	**5.467E-02**	**grams/sec**

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	########	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	########	grams/sec
Offload area to crusher	########	grams/sec

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	Comments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.5	0.50	113	338	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	4.5	1.60	128	848	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	4.5	4.50	1,013	3,038	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.5	0.41	76	261	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.3	0.21	38	131	Gasoline 9,500 watt continuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	4.5	1.60	128	848	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	4.5	4.50	1,013	3,038	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	4.5	4.50	1,013	3,038	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	4.5	1.60	128	848	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	4.5	4.50	1,013	3,038	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	4.5	4.50	1,013	3,038	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	1.5	1.23	228	783	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	4.5	4.50	1,013	3,038	
11	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	4.5	4.50	1,013	3,038	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	2.0	0.22	6	106	Limited Use
				4572.1			21,543					9,957	31,499	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	400,000
Increase Fraction	0.5

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	Nox g/bhp-hr	Load Factor	Increased Hours/Year	HP x Nox Factor	Weighted Avg Nox/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	0	5.93	0.44	113	1,779	0.07	88,061		0.22
2	HITACHI	EX700H Excavator	1991	450	0	5.93	0.38	128	2,669	0.08	129,796		0.33
3	CAT	CAT 980G Loader	2001	300	2	3.79	0.36	1,013	1,137	0.39	414,437		0.68
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	4.63	0.31	76	222	0.04	5,240		0.01
5	BOBCAT	250 WELDER	2008	12.5	3	4.63	0.45	38	58	0.02	990		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	2.32	0.38	1,013	893	0.24	343,659		0.34
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	3.79	0.38	128	1,721	0.05	83,693		0.14
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	4.75	0.37	1,013	317	0.48	118,869		0.24
9	GENIE	10,000 LB LIFT	2007	82	2	4.75	0.2	1,013	390	0.48	78,874		0.16
10	KOMATSU	ROCK TRUCK	2010	385	3	2.32	0.38	1,013	893	0.24	343,659		0.34
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	2.32	0.38	128	457	0.03	22,230		0.02
12	CAT	980H WHEEL LOADER	2007	355	3	2.32	0.36	1,013	824	0.24	300,202		0.30
13	CAT	980M WHEEL LOADER	2015	378	4	0.26	0.36	1,013	98	0.03	35,823		0.00
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	1.29	0.38	228	226	0.03	19,573		0.01
15	BOBCAT	SKID STEER S570	2017	66.8	4	2.74	0.37	1,013	183	0.28	68,568		0.08
16	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	1.29	0.5	1,013	538	0.13	272,327		0.15
17	GROVE	RT74 CRANE	1988	200	0	5.93	0.29	0	1,186	0.00	0		0.00
				4272.1		**58.99**		**9,951**	**13,590**	**2.80**	**2,326,000**		**3.04**
Fleet Average for ARB Offroad Fleet Reg Compliance									3.18				

	Annual NOx Emissions (grams/year)	Annual Nox Emissions (pounds/year)	Daily NOx Emissions (pounds/day)	Annual Average NOx Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	786,018	1731.32	7.69	4.043E-02
Equipment Operating at the haul truck location (highliighted in blue)	852,665	1878.12	8.35	4.386E-02
Total (based on increased number of project hours)	1,638,683	3609.43	16.04	8.429E-02
		1.805	**tons/year**	

Factor to Convert Annual Daily Average to Maxximum DailyEmissons	1.2	
Hours of Operation	9	hours/day

	Maximum Daily NOx Emissions (pounds/day)	Maximum Daily NOx Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	9.23	1.294E-01
Equipment Operating at the haul truck location (highliighted in blue)	10.02	1.404E-01
Total (based on increased number of project hours)	19.25	2.697E-01

Deer Creek Mine Expansion - Tulare County **2020 Project Development @ 400,000 tons/year**

Year: **2020**
Pollutant: **NOx**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	*4*	2	1	2	*4*	8.0	80.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.

Daily Operations 9 hours

Emission Factor to Convert Annual Daily Average Emissions' to Ma 1.2

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 14.0596 g/mi in Tulare County for 2020 (average from 5 to 15 mph)
Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)
Daily Average Emissions 1124.77 grams/day
Daily Average Emissions 2.48 pounds/day
Annual Average Emissions 1.302E-02 grams/sec

Daily Maximum Onsite Exhaust Emissions

Maximum Daily Exhaust Emissions	1349.7	grams/day
Maximum Daily Exhaust Emissions	2.973	pounds/day
Maximum Daily Exhaust Emissions	3.471E-02	grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)
Emission Factor g/mile T7 Construction 38.6071 g/hr in Tulare County for 2020
Daily Average Emissions 154.428 grams/day
DailyAverage Emissions 0.340 pounds/day
Annual Average Emissions 1.787E-03 grams/sec averaged over all hours of the year

Average Daily Onsite Idle Emissions

Maximum Daily Idling Emissions	185.31	grams/day
Maximum Daily Idling Emissions	0.41	pounds/day
Maximum Daily Idling Emissions	4.766E-03	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route 0.52 miles
Travel Distance along the Onroad onsite haul truck route 0.70 miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	7.621E-04	grams/sec
Travel emissions along the Onroad onsite haul truck route	1.025E-03	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 1.787E-03 grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad truck route and 1 truck covers the onroad haul truck toure

Travel distance along the offroad haul truck route 0.52 miles
Travel Distance along the Onroad onsite haul truck route 0.70 miles

Exhaust Emissions Allocated along each route

Travel emissions along the offroad haul truck route	1.480E-02	grams/sec
Travel emissions along the Onroad onsite haul truck route	1.991E-02	grams/sec

Idling Emissions
Assumption: 1 idling location at the maintenance building

Emissions : 4.766E-03 grams/sec

Emission Total **2.82 pounds/day**
0.32 tons/year

Deer Creek Mine Expansion - Tulare County

#REF! **Project Development @ 400,000 tons/year**

Average Daily Onsite Emission Estimates for Work Vehicles

Year: **2020**
Pollutant: **NOx**

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***1.6***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Factor to Convert Annual Average Daily Emissions to Maximum Daily Emissions 1.2

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	6.4	miles/day
EMFAC2017 Exhaust Emission Factor	2.875	g/mile
Averge Daily Exhaust Emissions	18.40	g/day
Averge Daily Exhaust Emissions	0.041	pounds/day
Annual Average Exhaust Emissions	2.130E-04	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	72.00	g/hr
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	504.02	grams/day
Average Daily Idling Emissions	1.110	pounds/day
Annual Average Idling Emissoins	5.834E-03	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT1

Maximum Daily Exhaust Emissions	22.084	grams/day
Maximum Daily Exhaust Emissions	0.049	pounds/day
Maximum Daily Exhaust Emissions	6.816E-04	grams/sec
Maximum Daily Idling Emissions	604.822	grams/day
Maximum Daily Idling Emissions	1.332	pounds/day
Maximum Daily Idling Emissions	1.867E-02	grams/sec

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	3.2	miles/day
EMFAC2017 Exhaust Emission Factor	2.399	g/mile
Averge Daily Exhaust Emissions	7.68	g/day
Averge Daily Exhaust Emissions	0.017	pounds/day
Annual Average Exhaust Emissions	8.887E-05	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	71.37	g/hr
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	249.78	grams/day
Average Daily Idling Emissions	0.550	pounds/day
Annual Average Idling Emissoins	2.891E-03	g/sec averaged over the entire year
Total Emissions	1.718	

Maximum Daily Repair Truck Onsite Emissions - LHDT2

Maximum Daily Exhaust Emissions	9.214	grams/day
Maximum Daily Exhaust Emissions	0.0203	pounds/day
Maximum Daily Exhaust Emissions	2.844E-04	grams/sec
Maximum Daily Idling Emissions	299.733	grams/day
Maximum Daily Idling Emissions	0.6602	pounds/day
Maximum Daily Idling Emissions	9.251E-03	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	1.509E-04	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	1.509E-04	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area and	4.362E-03	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	4.362E-03	grams/sec

Emission Total	**1.718**	**pounds/day**
	0.19	**tons/year**

Emission Allocation

Exhaust Emissions
Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Maximum Daily Exhaust Emissons along onroad-offroad haul truck route:	4.830E-04	grams/sec
Maximum Daily Exhaust Emissons along offroad haul truck route:	4.830E-04	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area and	1.396E-02	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	1.396E-02	grams/sec

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Year:	2020
Pollutant:	NOx

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	114		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	***1,200,000***	114	blasts/yr
Increased Blasts from Project/Yr		38	

Blasting Emission Factors with ANFO	**Nox (lbs/ton)**
	17

Average Daily Emission Calculations

	NOx Emissions (lbs/year)	NOx Emissions (tons/Yr)	NOx Emissions (pounds/day)	Annual Average NOx Emissions (grams/sec)	Maximum Daily Emissions	
Net Increase from Project	3221	**1.61**	14.32	7.522E-02	0	no change from the base case on a daily nbasis

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explosives)
5 tons of ANFO/blast

Emission Allocation

All blasting emissions will be represented as a point source at the excavation area.

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: TULARE
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	NOx_RUNEX
TULARE	2020	T7 tractor	Aggregated	5	DSL	16.9393
TULARE	2020	T7 tractor	Aggregated	10	DSL	13.5900
TULARE	2020	T7 tractor	Aggregated	15	DSL	9.9047
TULARE	2020	T7 tractor	Aggregated	20	DSL	7.9495
TULARE	2020	T7 tractor	Aggregated	25	DSL	6.7104

Average Emission Factors (g/mile) 5 mph to 15 mph

	NOx_RUNEX
T7 tractor	13.4780

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	NOx IDLEX emission_rate
2020	Annual	Tulare (SJV)	T7 tractor	Dsl	NOx	39.428

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	NOx_RUNEX
TULARE	2020	T7 single construction	Aggregated	5	DSL	17.633
TULARE	2020	T7 single construction	Aggregated	10	DSL	14.285
TULARE	2020	T7 single construction	Aggregated	15	DSL	10.260

Average (5-15mph)
NOx_RUNEX
14.060

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	NOx_IDLEX
2020	Annual	Tulare (SJV)	T7 Single Construction	Dsl	IDLEX	38.607

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	NOx_RUNEX
TULARE	2020	LHD1	Aggregated	5	DSL	2.811
TULARE	2020	LHD1	Aggregated	10	DSL	2.885
TULARE	2020	LHD1	Aggregated	15	DSL	2.931
					Average 5-15mpl	2.875
TULARE	2020	LHD2	Aggregated	5	DSL	2.376
TULARE	2020	LHD2	Aggregated	10	DSL	2.411
TULARE	2020	LHD2	Aggregated	15	DSL	2.411
					Average 5-15mpl	2.399

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	NOx_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	72.00
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	71.37

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Summary of Emissions **ONSITE ONLY**

Year: **2020**
Pollutant: **PM10 Exh**

Source

Source	**Annual Total Exhaust tons/year**
Drilling amd Blasting	0.000
Offroad Equipment	0.043
Water Trucks	0.007
Work Trucks -	0.002
OnRoad Onsite Haul Trucks -	0.004
Offroad Haul Trucks	0.026
Employee Commute	0.000
Unpaved Road Dust (fugitive dust)	0.000
Dust (loading, wind, storage piles, unpaved roads)	0.000
Permitted Sources	0.000
Total Project Emissions	0.082

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year
AERMOD Emission Sources

Year: **2020**
Pollutant: **PM10 Exh**
Annual Average Emissions

Source ID	Source Component	Annual Average Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Type
EOnOnHaul	Onroad, Onsite Haul Trucks, Exhaust	1.59E-04	Line-Volume	5.103E-04	Line Volune
	Water Trucks, Exhaust	1.29E-06		3.483E-04	
	Work Trucks.Exhaust	3.90E-05		2.950E-05	
	Total	**2.00E-04**		**8.880E-04**	
EOffHaul	Offroad Haul Trucks,Exhaust	1.175E-03	Line Volume	3.760E-03	Line Volume
	Water Trucks.Exhaust	1.294E-06		4.685E-04	
	Work Trucks,Exhaust	3.898E-05		2.950E-05	
	Total	**1.215E-03**		**4.258E-03**	
Iscale	Onroad, Onsite Haul Trucks, Idle (Scale @ Entrane/Scale@ Exit	**2.862E-05**	Point	**9.159E-05**	Point
Imaint	Maintenance Area Work Truck,Idle	4.909E-05	Point	1.571E-04	Point
	Maintenance Area Water Truck, Idle	3.034E-06		8.090E-06	
	Total	**5.212E-05**		**1.652E-04**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	1.431E-05	Point	4.579E-05	Point
	Onsite Equipment, Operations	8.942E-04		2.861E-03	
	Total	**9.085E-04**		**2.907E-03**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	1.450E-05	Point	4.640E-05	Point
	Excavation Area, Work Truck, Idle	4.909E-05		1.571E-04	
	Onsite Equipment, Operations	1.125E-03		3.599E-03	
	Total	**1.188E-03**		**3.802E-03**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**1.450E-05**	Point	**4.640E-05**	Point

.

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Onroad Onsite Average Daily Haul Truck Emissions

Year: 2020
Pollutant: PM10 Exh

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	*71*	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	0.278	g/mi in Tulare County for 2020 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**13.8**	grams/day
Daily Exhaust Emissions	**0.03**	pounds/day
Annual Exhaust Emissions	**1.595E-04**	grams/sec averaged over all hours of the year

Maximum Daily Onsite Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emi **1.2**

Maximum Daily Emissio	16.53	grams/day
Maximum Daily Emissio	0.04	pounds/day
Maximum Daily Emissio	**5.103E-04**	**grams/sec**

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	71	trucks/day
EMCAC2017 Idling Emission Factor	0.070	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**3.71**	g/day
Daily Idling Emissions	**0.01**	pounds/day
Annual Idling Emissions	**4.293E-05**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Maximum Daily Onsite Idling Emissions

Maximum Daily Emissions	4.45	grams/day
Maximum DailyEmissions	0.01	grams/day
Maximum Daily Emissio	**1.374E-04**	**grams/sec**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**1.595E-04**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**1.431E-05**	**grams/sec**
Material Loading	**1.431E-05**	**grams/sec**
Weight Scale @ Exit	**1.431E-05**	**grams/sec**

Emission Total	**0.04**	**pounds/day**
	0.004	**tons/year**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**5.103E-04**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**4.579E-05**	**grams/sec**
Material Loading	**4.579E-05**	**grams/sec**
Weight Scale @ Exit	**4.579E-05**	**grams/sec**

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Offroad Haul Truck Daily Average Daily Emissions

Year: **2020**
Pollutant: **PM10 Exh** (Unmitigated)

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year	
Number of Trucks	2	trucks	
Average Truck Speed	5	mph	
Increased Hours of Operation	***3.9***	hours/day	
Trip Distance	830	meters or	0.52 miles
Travel Time	0.103	hrs/trip	
Daily Trips	38	trips/day/truck	
	76	trips/day for 2 trucks	
CalEEMod Exhaust Emission Factor	0.09	g/hp-hr (Tier 3)	
Equipment Size	385.00	hp	
Load Factor	0.38		
Work Day	9	hours/day	

Daily Average Exhaust Emissions	101.52	grams/day
Daily Average Exhaust Emissions	0.22	pounds/day
Annual Average Exhaust Emissions	1.175E-03	grams/sec averaged over the entire year

Average Daily Osite Project Incremental Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	76	events
EMCAC2017 Idling Emission Factor	0.066	g/hr in Tulare County for 2020
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	2.51	grams/day
Daily Average Idling Emissions	0.01	pounds/day
Annual Average Idling Emissions	2.900E-05	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	1.175E-03	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	1.450E-05	grams/sec
Offload area to crusher	1.450E-05	grams/sec

Emission Tota	**0.23**	**pounds/day**
	0.026	**tons/day**

Offroad Haul Truck Maximum Daily Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Em **1.2**

Maximum Daily Onsite Exhaust Emissions

Increased hours of Operation	4.73	hours/day

Maximum Daily Exhaust Emissions	**121.83**	**grams/day**
Maximum Daily Exhaust Emissions	**0.27**	**pounds/day**
Maximum Daily Exhaust Emissions	**3.760E-03**	**grams/sec**

Maximum Daily Onsite Idling Emissions

Maximum Daily Idling Emissions	**3.01**	**grams/day**
Maximum Daily Idling Emissions	**0.01**	**pounds/day**
Maximum Daily Idling Emissions	**9.280E-05**	**grams/sec**

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	3.760E-03	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	4.640E-05	grams/sec
Offload area to crusher	4.640E-05	grams/sec

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	Comments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.5	0.50	113	338	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	4.5	1.60	128	848	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	4.5	4.50	1,013	3,038	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.5	0.41	76	261	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.3	0.21	38	131	Gasoline 9,500 watt continuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	4.5	1.60	128	848	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	4.5	4.50	1,013	3,038	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	4.5	4.50	1,013	3,038	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	4.5	1.60	128	848	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	4.5	4.50	1,013	3,038	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	4.5	4.50	1,013	3,038	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	1.5	1.23	228	783	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	4.5	4.50	1,013	3,038	
11	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	4.5	4.50	1,013	3,038	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	2.0	0.22	6	106	Limited Use
				4572.1			21,543					9,957	31,499	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	400,000
Increase Fraction	0.5

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	PM10 g/bhp-hr	Load Factor	Increased Hours/Year	HP x PM10 Factor	Weighted Avg PM10/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	0	0.108	0.44	113	32	0.00	1,604		0.00
2	HITACHI	EX700H Excavator	1991	450	0	0.108	0.38	128	49	0.00	2,364		0.01
3	CAT	CAT 980G Loader	2001	300	2	0.088	0.36	1,013	26	0.01	9,623		0.02
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	0.28	0.31	76	13	0.00	317		0.00
5	BOBCAT	250 WELDER	2008	12.5	3	0.28	0.45	38	4	0.00	60		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	0	0.38	1,013	0	0.00	0		0.00
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	0.088	0.38	128	40	0.00	1,943		0.00
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	0.192	0.37	1,013	13	0.02	4,805		0.02
9	GENIE	10,000 LB LIFT	2007	82	2	0.192	0.2	1,013	16	0.02	3,188		0.02
10	KOMATSU	ROCK TRUCK	2010	385	3	0	0.38	1,013	0	0.00	0		0.00
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	0.088	0.38	128	17	0.00	843		0.00
12	CAT	980H WHEEL LOADER	2007	355	3	0.088	0.36	1,013	31	0.01	11,387		0.03
13	CAT	980M WHEEL LOADER	2015	378	4	0.008	0.36	1,013	3	0.00	1,102		0.00
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	0.008	0.38	228	1	0.00	121		0.00
15	BOBCAT	SKID STEER S570	2017	66.8	4	0.008	0.37	1,013	1	0.00	200		0.00
16	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	0.008	0.5	1,013	3	0.00	1,689		0.00
17	GROVE	RT74 CRANE	1988	200	0	6.9	0.29	0	1,380	0.00	0		0.00
				4272.1		**8.444**		**9,951**	**1,630**	**0.07**	**39,246**		**0.11**
Fleet Average for ARB Offroad Fleet Reg Compliance									0.38		**Trucks**		

	Annual PM10 Emissions (grams/year)	Annual PM10 Emission (pounds/year)	Daily PM10 Emission (pounds/day)	Annual Average PM10 Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	17,383	38.29	0.17	8.942E-04
Equipment Operating at the haul truck location (highliighted in blue)	21,863	48.16	0.21	1.125E-03
Total (based on increased number of project hours)	39,246	86.45	0.38	2.019E-03
		0.043	**tons/year**	

Factor to Convert Annual Daily Average to Maxximum DailyEmis	**1.2**	
Hours of Operation	9	hours/day

	Maximum Daily PM10 Emissions (pounds/day)	Maximum Daily PM10 Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	0.20	2.861E-03
Equipment Operating at the haul truck location (highliighted in blue)	0.26	3.599E-03
Total (based on increased number of project hours)	0.46	6.460E-03

Deer Creek Mine Expansion - Tulare County **2020 Project Development @ 400,000 tons/year**

Year: **2020**
Pollutant: **PM10 Exh**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	*4*	2	1	2	*4*	8.0	80.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.
Emission Factor to Convert Annual Daily Average Emissions' to Maximum Daily Emissic 1.2
Daily Operations 9 hours

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 0.3308 g/mi in Tulare County for 2020 (average from 5 to 15 mph)
Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)

Daily Average Emissions	26.46	grams/day
Daily Average Emissions	0.06	pounds/day
Annual Average Emissions	3.063E-04	grams/sec

Daily Maximum Onsite Exhaust Emissions

Maximum Daily Exhaust Emissions	31.76	grams/day
Maximum Daily Exhaust Emissions	0.07	pounds/day
Maximum Daily Exhaust Emissions	8.168E-04	grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)

Emission Factor g/mile T7 Construction	0.0655	g/hr in Tulare County for 2020	
Daily Average Emissions	0.262	grams/day	
DailyAverage Emissions	0.001	pounds/day	
Annual Average Emissions	3.034E-06	grams/sec	averaged over all hours of the year

Average Daily Onsite Idle Emissions

Maximum Daily Idling Emissions	0.31	grams/day
Maximum Daily Idling Emissions	0.00	pounds/day
Maximum Daily Idling Emissions	8.090E-06	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	1.294E-06	grams/sec
Travel emissions along the Onroad onsite haul truck route	1.740E-06	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions :	3.034E-06	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad truck route and 1 truck covers the onroad haul truck toure

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Exhaust Emissions Allocated along each route

Travel emissions along the offroad haul truck route	3.483E-04	grams/sec
Travel emissions along the Onroad onsite haul truck route	4.685E-04	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions :	8.090E-06	grams/sec

Emission Total	**0.059**	**pounds/day**
	0.007	**tons/year**

Deer Creek Mine Expansion - Tulare County

2020 Project Development @ 400,000 tons/year

Average Daily Onsite Emission Estimates for Work Vehicles

Year: **2020**
Pollutant: **PM10 Exh**

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***1.6***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Factor to Convert Annual Average Daily Emissions to Maximum Daily Emissi 1.2

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	6.4	miles/day
EMFAC2017 Exhaust Emission Factor	0.165	g/mile
Averge Daily Exhaust Emissions	1.06	g/day
Averge Daily Exhaust Emissions	0.002	pounds/day
Annual Average Exhaust Emissions	1.224E-05	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.81	g/hr
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	5.68	grams/day
Average Daily Idling Emissions	0.013	pounds/day
Annual Average Idling Emissoins	6.573E-05	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT1

Maximum Daily Exhaust Emissions	1.269	grams/day
Maximum Daily Exhaust Emissions	0.003	pounds/day
Maximum Daily Exhaust Emissions	3.917E-05	grams/sec
Maximum Daily Idling Emissions	6.814	grams/day
Maximum Daily Idling Emissions	0.015	pounds/day
Maximum Daily Idling Emissions	2.103E-04	grams/sec

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	3.2	miles/day
EMFAC2017 Exhaust Emission Factor	0.167	g/mile
Averge Daily Exhaust Emissions	0.54	g/day
Averge Daily Exhaust Emissions	0.001	pounds/day
Annual Average Exhaust Emissions	6.200E-06	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.80	g/hr
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	2.80	grams/day
Average Daily Idling Emissions	0.006	pounds/day
Annual Average Idling Emissoins	3.245E-05	g/sec averaged over the entire year
Total Emissions	0.022	pounds/sday

Maximum Daily Repair Truck Onsite Emissions - LHDT2

Maximum Daily Exhaust Emissions	0.643	grams/day
Maximum Daily Exhaust Emissions	0.0014	pounds/day
Maximum Daily Exhaust Emissions	1.984E-05	grams/sec
Maximum Daily Idling Emissions	3.365	grams/day
Maximum Daily Idling Emissions	0.0074	pounds/day
Maximum Daily Idling Emissions	1.039E-04	grams/sec

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	3.898E-05	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	3.898E-05	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area and	4.909E-05	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	4.909E-05	grams/sec

Emission Total	**0.022**	**pounds/day**
	0.002	**tons/year**

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Maximum Daily Exhaust Emissons along onroad-offroad haul truck route:	2.950E-05	grams/sec
Maximum Daily Exhaust Emissons along offroad haul truck route:	2.950E-05	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area ar	1.571E-04	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	1.571E-04	grams/sec

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: TULARE
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM10_Total	PM10_RunEx	PM10_TW	PM10_BW
TULARE	2020	T7 tractor	Aggregated	5	DSL	0.3205	0.2225	0.0360	0.0620
TULARE	2020	T7 tractor	Aggregated	10	DSL	0.2848	0.1868	0.0360	0.0620
TULARE	2020	T7 tractor	Aggregated	15	DSL	0.2279	0.1299	0.0360	0.0620
TULARE	2020	T7 tractor	Aggregated	20	DSL	0.1890	0.0910	0.0360	0.0620
TULARE	2020	T7 tractor	Aggregated	25	DSL	0.1732	0.0752	0.0360	0.0620

Average Emission Factors (g/mile) 5 mph to 15 mph

	PM10_RUNEX
T7 tractor	0.2778

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	PM10 IDLEX emission_rate
2020	Annual	Tulare (SJV)	T7 tractor	Dsl	NOx	0.070

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM10_Total	PM10_RunEx	PM10_TW	PM10_BW
TULARE	2020	T7 single construction	Aggregated	5	DSL	0.385	0.2872	0.036	0.062
TULARE	2020	T7 single construction	Aggregated	10	DSL	0.340	0.2419	0.036	0.062
TULARE	2020	T7 single construction	Aggregated	15	DSL	0.267	0.1693	0.036	0.062

Average (5-15mph)

PM10_RUNEX
0.331

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	PM10_IDLEX
2020	Annual	Tulare (SJV)	T7 Single Construction	Dsl	IDLEX	0.066

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM10_Total	PM10_RunEx	PM10_TW	PM10_BW
TULARE	2020	LHD1	Aggregated	5	DSL	0.190	0.102	0.012	0.076
TULARE	2020	LHD1	Aggregated	10	DSL	0.162	0.074	0.012	0.076
TULARE	2020	LHD1	Aggregated	15	DSL	0.144	0.056	0.012	0.076
					Average 5-15mpl	0.165			
TULARE	2020	LHD2	Aggregated	5	DSL	0.188	0.087	0.012	0.089
TULARE	2020	LHD2	Aggregated	10	DSL	0.165	0.064	0.012	0.089
TULARE	2020	LHD2	Aggregated	15	DSL	0.150	0.049	0.012	0.089
					Average 5-15mpl	0.167			

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	PM10_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	0.81
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	0.80

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year
Summary of Emissions

Year: **2020**

Pollutant: **PM10 Fugitive Dust**

Emission Factor to Convert Annunal Daily Average Emissions to Maximum DailyEmissio 1.2

Source	Annual Ave pounds/day	Total tons/year	Max Daily (pounds/day)
OnRoad Onsite Haul Trucks - Fugitive Dust Emissions	21.17	2.38	25.40
Offroad Trucks - Fugitive Dust Emissions	22.98	2.59	27.58
Storage Piles - Fugitive Dust	1.11	0.12	1.33
Wind Erosion - Fugitive Dust	1.97	0.22	2.37
Truck Loading - Fugitive Dust	0.36	0.04	0.43
Permitted Sources	2.72	0.31	3.26
Blasting	0.12	0.0135	
Total	50.43	5.67	60.51

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year
AERMOD Emission Sources

Year: 2020
Pollutant: PM10 Fugitive Dust

Source ID	Source Component	Average Daily Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Tyle
EOnOnHaul	Onroad, Onsite Haul Trucks, Unpaved Road Dust	1.11E-01	Line-Volume	3.559E-01	Line-Volume
EOffHaul	Offroad Haul Trucks, Unpaved Road Dust	1.208E-01	Line Volume	3.865E-01	Line Volume
Spiles	Storage Piles Fugitive Dust	2.054E-06	Circular Area	5.917E-06	Circular Area
Permit1	Fugitive Dust at the Offroad Truck Unloading Area	7.143E-03	Point	4.571E-02	Point
Permit2	Fugitive Dust at the Excavation Area (Truck loading, boring, blasting, and wind erosion)	1.968E-02	Point	7.757E-02	Point
Matload	Loading of Onroad Haul Trucks	9.342E-04	Point	2.989E-03	Point

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Year: 2020
Pollutant: **PM10 Fugitive Dust**

Annual Average Onsite Project Incremental Unpaved Road Dust Emissions from On-Road Haul Trucks

Average Daily Haul Trucks	71	trucks/day
Onsite Round trip Distance	0.7	miles
Average Vehicle Speed	5	mph
Operational Day	9	hours

Emission Factor: $E = k\,(s/12)^a (W/3)^b$

	k (constant PM2.5)	s (% silt content)	W (vehicle Weight tons)	PM10 EF (lbs/vmt)
Loaded Trucks 40 tons	1.5	5	40	2.1884
Unloaded Trucks 15 tons	1.5	5	15	1.4075
Average				1.0942

Annual VMT	11160	miles/year	
Annual PM10 Fdust Emissions	12211.2	pounds/year	
(Unmitigated)	6.1	tons/year	
Annual PM10 FDust Emissions	4762.4	pounds/year	3x Water Control
(Mitigated)	2.4	tons/year	
	21.2	**pounds/day**	

Average PM10 Fdust Emissions 1.112E-01 grams/sec averaged over all hours of the year

Factor to Convert Average Daily Emissions to Maximum Daily Emissions: 1.2

Maximum Daily Number of Truck	85	trucks/day
Max Daily VMT	59.52	miles/day
Max Daily PM10 FDUST	65.1	pounds/day (Unmitigated)
Max Daily PM10 FDUST	**25.40**	**pounds/day (mitigated) (3x water control)**
Max Daily PM10 FDUST	**3.559E-01**	**grams/sec**

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	114		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	1,200,000	114	blasts/yr
Increased Blasts from Project/Yr		38	

Emission Factors

	PM10 (kg/Mg)
Wet Drilling Unfragmented Stone	0.00004

PM10 EF = 0.000014(A)^(1.5)(0.52) , where A = horizontal area in ft2 with a scaling factor for <10um of 0.52
PM2.5 EF = 0.000014(A)^(1.5)(0.03) , where A = horizontal area in ft2 with a scaling factor for <2.5um of 0.03
Source of PM2.5 drilling: 18.5 percent of PM10 emissions, according to the values for controlled tertiary crushing in Table 11.19.2-1 from U.S.

PM10 Dust Emission Factor (lbs/blast) 0.060376618

Dust Emissions

		PM10 EF (lbs/blast)	**PM10 Emissions (lbs/day)**	**PM10 Emissions (tons/year)**	
Baseline	Blasting	0.0604	0.0604	0.0023	
	Drilling	0.65	0.6500	0.0246	
	Total		**0.7104**	**0.0269**	
With Project	Blasting	0.0604	0.0604	0.0034	
	Drilling	0.65	0.6500	0.0369	
	Total		**0.7104**	**0.0404**	
Net Increase from Project	Blasting and Drilling		0.0000	0.0135	
				3.875E-04	g/sec averaged over entire year

Daily rates are unchanged since the number of blasts per day would not change.

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explosives)
5 tons of ANFO/blast

Deer Creek Mine Expansion - Tulare Count 2020 Project Development @ 400,(

Year: 2020
Pollutant: **PM10 Fugitive Dust**

Annual Average Onsite Project Incremental Exhaust Emissions

Days of Operation	225	days/year		
Number of Trucks	2	trucks		
Average Truck Speed	5	mph		
Increased Hours of Operation	3.9	hours/day		
Trip Distance	830	meters or	0.52	miles
Travel Time	0.103	hrs/trip		
Daily Trips	38	trips/day/truck		
	76	trips/day for 2 trucks		
Facility Operations	9	hours/day		

Emission Factor: $E = k\,(s/12)^a (W/3)^b$

	k (constant PM10)	s (% silt content)	W (vehicle Weight tons)	PM10 EF (lbs/vmt)
Loaded Trucks 80 tons	1.5	5	80	2.9894
Unloaded Trucks 40 tons	1.5	5	40	2.1884
Average				1.4947

Annual VMT	8871	miles/year
Annual PM10 Fdust Emissions	13260	pounds/year
(Unmitigated)	6.6	tons/year
Annual PM10 FDust Emissions	**5171.5**	**pounds/year**
(Mitigated)	**2.6**	**tons/year**
	23.0	**pounds/day**
Average PM10 Fdust Emissions	**1.208E-01**	**grams/sec averaged over all hours of the yea**

Factor to convert average emssions to maximum emissions: 1.2

Maximum Daily VMT	47	miles/day
Maximun Daily PM10 FDUST	70.72	pounds/day (unmitigated)
Maximun Daily PM10 FDUST	0.99	grams/sec (unmitigated)
Maximum Daily PM10 FDUST	27.58	pounds/day (mitigated) (3x watering)
Maximun Daily PM10 FDUST	**3.865E-01**	**grams/sec (mitgated)**

)00 tons/year

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Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Storage Piles

	PM10 EF (lb/acre/day)	Control Efficiency	Pile Size (acres)	PM10 FDust lb/hour	lb/day	tons/year
Existing Storage Piles	7.1	0.39	0.8	0.22	2.22	0.25
Storage Piles with Project	7.1	0.39	1.2	0.33	3.32	0.37
Increase From Project	7.1	0.39	0.4	0.11	1.11	**0.12**

Pile Size (Increase from Project) 0.4 acres or 2833 m2

Average PM10 Fdust Increase	**1.11**	**pounds/day (mitigated)**
Average PM10 Fdust Increase	0.00582	grams/sec averaged over all hours of the year
Average PM10 Fdust Increase	**2.054E-06**	**gram/m2-sec area source emission rate**

Factor to convert average emissions to maximum emisison 1.2

Maximum Daily PM10 Fdust Increa	**5.917E-06**	**grams/m2-sec**

US EPA AP-42, Section 11.9, Western Surface Coal Mining, Table 11.9-1: http://www.epa.gov/ttnchie1/ap42/ch11/final/c11s09.pdf
The emission factor is 0.72*u for TSP; the "u" refers to the wind speed, which is an average of 4.5 knots (2.3 meters per second or 5.2 miles per hour)

TSP (<=30 mm) = 0.72 x u lb TSP/acre-hr: Where u (wind speed) = 5.2 mph
0.72 x 5.2 = 3.74 lb TSP/acre-hr
PM10 = TSP x SF: Where SF (Scaling Factor) = 0.19
PM10 = 3.74 x 0.19 = 0.79 lb PM10/acre-hr x 10 operating hrs/day = 7.1 lb PM10/acre-day
PM2.5 = TSP x SF: Where SF (Scaling Factor) = 0.105
PM2.5 = 3.74 x 0.105 = 0.39 lb PM2.5/acre-hr x 10 operating hrs/day = 3.9 lb PM2.5/acre-day
A scaling factor for active storage pile PM10 was not provided in AP-42 Table 11.9-1. Therefore, a scaling factor was derived as follows:
The scaling factor for PM10 for bulldozing overburden (0.75 x PM15) was used as a basis. Since the scaling factor for bulldozing overburden is to be applied to the corresponding PM15 emission factor and since there is no data provided for PM15 for the active storage pile emissions, a PM15 value was estimated for the active storage piles using the ratio of PM15 to TSP provided for bulldozer overburden as follows
Bulldozing overburden TSP = 5.7 (s)1.2 / M1.3 lb/hr, where s (silt content) = 6.9%, and M (moisture content) = 7.9%.
Bulldozing overburden TSP = 5.7 x 6.91.2 / 7.91.3 = 3.94 lb/hr
Bulldozing overburden PM15 = 1.0 (s)1.5 / M1.4 lb/hr
Bulldozing overburden PM15 = 1.0 x 6.91.5 / 7.91.4 = 1.00 lb/hr
The ratio of PM15 to TSP = 1.00/3.94 = 0.25
Applying the PM15 to TSP ratio and PM10 scaling factor based on bulldozing overburden, a scaling factor for the active storage pile PM10 is estimated as 0.25 x 0.75 = 0.19.
The scaling factor for PM2.5 is 0.105, as defined in AP-42 Table 11.9-1, dated July 1998, and is applied to the TSP equation as noted in the referenced table
Assumes water spray for dust suppression at three per day and 61% emission reduction

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Wind Erosion

	Area (acres)	Emission Factor (tons/acre/year TSP	PM10 Emissions PM10 Emissions	lbs/hour	lb/day	tons/year
Existing	0.39	0.38	0.228	0.0203	0.4872	0.0889
With Project	0.73	0.38	0.228	0.0380	0.9120	0.1664
Increase from Project	0.34	0.38	0.228	0.0177	0.4248	0.0775

Exposed Area 0.34 acres or 1376 m2

Average PM10 Fdust Increase 2.232E-03 grams/sec averaged over all hours of the year

Factor to Convert Averager Emissions to Maximum Emssions 1.2

Maximum PM10 Fdust Increase 1.116E-04 grams/sec

Exposed area is assumed to be the proposed aggregate processing area, but not the drilling and blasting area consisting of rock surface.
Exposed areas are assumed to be the areas of the pit that are exposed, where topsoils are removed and drilling and blasting occur, as well as berms and benchs prior to stabilization.
Topsoils are removed and drilling and blasting occur, as well as berms and benchs prior to stablization. Since it is assumed that 17,000 square feet (0.39 acres) are disturbed for each blast and there are a maximum of 45 blasts per year, then 0.39 acres is assumed to be disturbed at any given time. Areas that are not disturbed consist of hard rock and have negligible potential for wind erosion.
Emission factor for PM2.5 from US EPA AP-42, Table 11.9-4 for total suspeded particulates (TSP). It is assumed that PM2.5 is 60% of TSP and PM2.5 is 3.1%, according to information in Table 11.9-2 for grading.
It is assumed that the daily and hourly estimates are over the entire year
The increase in area exposed is assumed to be proportional to the increase in annual throughput

Truck Loading to Off-Road 40 ton/load Haul Trucks

	Material Loaded (tons/year)	Emission Factors (lbs/ton) PM10	PM10 Emisions lbs/hour	lb/day	tons/year
Loading from Existing Ops	800,000	0.0001	0.04	0.36	0.04
Loading with Project	1,200,000	0.0001	0.06	0.53	0.06
Increase from Project	**400,000**	**0.0001**	**0.02**	**0.18**	**0.02**

	PM10 EF (lb/acre/day)	Control Efficiency	Pile Size (acres)	PM10 Emissions lb/hour	lb/day	tons/year
Existing Storage Piles	7.1	0.39	0.8	0.22	2.22	0.25
Storage Piles with Project	7.1	0.39	1.2	0.33	3.32	0.37
Increase From Project	7.1	0.39	0.4	0.11	1.11	0.12

	Area (acres)	Emissions Factors (tons/acre/year) TSP	PM10	PM10 Emissions lbs/hour	lb/day	tons/year
Existing	0.39	0.38	0.228	0.0203	0.4872	0.0889
With Project	0.73	0.38	0.228	0.0380	0.9120	0.1664
Increase from Project	0.34	0.38	0.228	0.0177	0.4248	0.0775

Total Fugitive Dust

	PM10 tons/year	PM10 lb/day	Average Emission (grams/sec)
Existing	0.38	3.06	
With Project	0.60	4.77	
Increase from Project	**0.22**	1.71	**8.986E-03**

Factor to convert average emisions to maximmum emissions **1.20**

Maximum Daily Emissions 2.876E-02 grams/sec

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Truck Loading Dust

Truck Loading to On-Road 25 ton/load Haul Trucks

	Material Loaded (tons/year)	Emission Factors PM10	PM10 Emisions lbs/hour	lb/day	tons/year
Loading from Existing Ops	800,000	0.0001	0.04	0.36	0.04
Loading with Project	1,200,000	0.0001	0.06	0.53	0.06
Increase from Project	**400,000**	**0.0001**	**0.02**	**0.18**	**0.02**

OPerational Hours 9 hours/day

Average PM2.5 FDust Increase 9.342E-04 grams/sec averaged over all hours of the year

Factor to convert average emissions to maximum emissions 1.2

Maximum Daily PM2.5 Emissions 2.989E-03 grams/sec

Truck Loading to Off-Road 40 ton/load Haul Trucks

	Material Loaded (tons/year)	Emission Factors PM10	PM10 Emisions lbs/hour	lb/day	tons/year
Loading from Existing Ops	800,000	0.0001	0.04	0.36	0.04
Loading with Project	1,200,000	0.0001	0.06	0.53	0.06
Increase from Project	**400,000**	**0.0001**	**0.02**	**0.18**	**0.02**

Average PM2.5 FDust Increase 9.342E-04 grams/sec averaged over all hours of the year

Factor to convert average emissions to maximum emissions 1.2

Maximum Daily Emssions 2.989E-03 grams/sec

The PM10 emission factor is 0.0000460 lb/ton and the emission factor for PM2.5 is 0.0000130 lb/ton. The ratio of PM2.5 to PM10 is 0.0000130/0.0000460 = 0.283.
Since the PM10 emission factor is estimated to be 0.00010 lb/ton, the emission factor for PM2.5 is estimated to be 0.0001 x 0.283 lb/ton
Emission factor for PM10 is from EPA AP-42, Table 11.19.2-2 (Emission Factors for Crushed Stone Processing Operations). Website: http://www.epa.gov/ttnchie1/ap42/ch11/final/c11s1902.pdf

based on AP-42 11.19.2, Final Section, updated August 2004. The PM10 emission factor 0.000046 lb/ton and the emission factor for PM2.5 to PM10 is 0.000013/0.000046 = 0.283.
Since the PM10 emission factor is estimated to be 0.0001 lb/ton, the emission factor for PM2.5 is estimated to be 0.0001 x 0.283 = 0.0000283 lb/ton
- Assumes 225 days/year and 9 hours/day

Total Emissions 0.04 tons/year

Deer Creek Mine Expansion - Tulare Cour 2020 Project Development @ 400,000 tons/year

Permitted Equipment

Operational Hours 9 hours/day

Emissions from Permitted Equipment

	Throughput (tons/year)	PM10 dust (lbs/day)	PM10 dust (tons/year)
Existing Baseline Emissions	800,000	6.58	0.74
Permit Limit	1,200,000	9.30	1.05
Increase from Baseline from Project	400,000	2.72	**0.31**

Average PM10 FDust Increase	**1.43E-02**	**grams/sec averaged over all hours of the year**

Assume 1/2 Emissions Occur at the Excavation Area	**7.143E-03**	**grams/sec**
Assume 1/2 Emissions Occur at the Offroad Unloading Area	**7.143E-03**	**grams/sec**

Factor to Convert Average Emissions to Maximum Emission **1.2**

Assume 1/2 Emissions Occur at the Excavation Area	**4.571E-02**	**grams/sec**
Assume 1/2 Emissions Occur at the Offroad Unloading Area	**4.571E-02**	**grams/sec**

Project currently operating at 53% of Permitted Emission Limits
With Project the facility would operate at permitted limits.
SJVAPCD Permit S-4136-3-6

Source of PM2.5 dust: 18.5 percent of PM10 emissions, according to the values for controlled tertiary crushing in Table 11.19.2-1 from the USEPA AP-42 Section 11.19.2, Crushed Stone Processing and Pulverized Material Processing
Source of PM2.5 exhaust: CalEEMod manual (Appendix D, table 3.5) indicates PM2.5 is the same as PM10
Source of other values: San Joaquin Valley Air Pollution Control District, Authority to Construct

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Summary of Emissions **ONSITE ONLY**

Year: **2020**
Pollutant: **PM2.5 Exh**

Source	**Annual Total Exhaust tons/year**
Drilling amd Blasting	0.000
Offroad Equipment	0.043
Water Trucks	0.005
Work Trucks -	0.002
OnRoad Onsite Haul Trucks -	0.003
Offroad Haul Trucks	0.026
Employee Commute	0.000
Unpaved Road Dust (fugitive dust)	0.000
Dust (loading, wind, storage piles, unpaved roads)	0.000
Permitted Sources	0.000
Total Project Emissions	0.080

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year
AERMOD Emission Sources

Year: 2020
Pollutant: PM2.5 Exh
Annual Average Emissions

Source ID	Source Component	Annual Average Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Type
EOnOnHaul	Onroad, Onsite Haul Trucks, Exhaust	1.19E-04	Line-Volume	3.802E-04	Line Volune
	Water Trucks, Exhaust	1.24E-06		2.713E-04	
	Work Trucks.Exhaust	3.55E-05		1.922E-05	
	Total	**1.56E-04**		**6.708E-04**	
EOffHaul	Offroad Haul Trucks,Exhaust	1.175E-03	Line Volume	3.760E-03	Line Volume
	Water Trucks.Exhaust	1.238E-06		3.650E-04	
	Work Trucks,Exhaust	3.551E-05		1.922E-05	
	Total	**1.212E-03**		**4.144E-03**	
Iscale	Onroad, Onsite Haul Trucks, Idle (Scale @ Entrane/Scale@ Exit	**2.737E-05**	Point	**8.758E-05**	Point
Imaint	Maintenance Area Work Truck,Idle	4.697E-05	Point	1.503E-04	Point
	Maintenance Area Water Truck, Idle	2.902E-06		7.740E-06	
	Total	**4.987E-05**		**1.580E-04**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	1.368E-05	Point	4.379E-05	Point
	Onsite Equipment, Operations	8.942E-04		2.861E-03	
	Total	**9.079E-04**		**2.905E-03**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	1.387E-05	Point	4.439E-05	Point
	Excavation Area, Work Truck, Idle	4.697E-05		1.503E-04	
	Onsite Equipment, Operations	1.125E-03		3.599E-03	
	Total	**1.185E-03**		**3.794E-03**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**1.387E-05**	Point	**4.439E-05**	Point

.

Deer Creek Mine Expansion - Tulare Coun **2020** **Project Development @ 400,000 tons/year**

Onroad Onsite Average Daily Haul Truck Emissions

Year: **2020**
Pollutant: **PM2.5 Exh**

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	***71***	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	0.207	g/mi in Tulare County for 2020 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**10.3**	grams/day
Daily Exhaust Emissions	**0.02**	pounds/day
Annual Exhaust Emissions	**1.188E-04**	grams/sec averaged over all hours of the year

Maximum Daily Onsite Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emissions **1.2**

Maximum Daily Emissions	12.32	grams/day
Maximum Daily Emissions	0.03	pounds/day
Maximum Daily Emissio	**3.802E-04**	**grams/sec**

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	71	trucks/day
EMCAC2017 Idling Emission Factor	0.067	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**3.55**	g/day
Daily Idling Emissions	**0.01**	pounds/day
Annual Idling Emissions	**4.105E-05**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Maximum Daily Onsite Idling Emissions

Maximum Daily Emissions	4.26	grams/day
Maximum DailyEmissions	0.01	grams/day
Maximum Daily Emissio	**1.314E-04**	**grams/sec**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**1.188E-04**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**1.368E-05**	**grams/sec**
Material Loading	**1.368E-05**	**grams/sec**
Weight Scale @ Exit	**1.368E-05**	**grams/sec**

Emission Total	**0.03**	**pounds/day**
	0.003	**tons/year**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**3.802E-04**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**4.379E-05**	**grams/sec**
Material Loading	**4.379E-05**	**grams/sec**
Weight Scale @ Exit	**4.379E-05**	**grams/sec**

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Offroad Haul Truck Daily Average Daily Emissions

Year: **2020**
Pollutant: **PM2.5 Exh** (Unmitigated)

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year	
Number of Trucks	2	trucks	
Average Truck Speed	5	mph	
Increased Hours of Operation	***3.9***	hours/day	
Trip Distance	830	meters or	0.52 miles
Travel Time	0.103	hrs/trip	
Daily Trips	38	trips/day/truck	
	76	trips/day for 2 trucks	
CalEEMod Exhaust Emission Factor	0.088	g/hp-hr (Tier 3)	
Equipment Size	385.00	hp	
Load Factor	0.38		
Work Day	9	hours/day	

Daily Average Exhaust Emissions	101.52	grams/day
Daily Average Exhaust Emissions	0.22	pounds/day
Annual Average Exhaust Emissions	1.175E-03	grams/sec averaged over the entire year

Average Daily Osite Project Incremental Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	76	events
EMCAC2017 Idling Emission Factor	0.063	g/hr in Tulare County for 2020
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	2.40	grams/day
Daily Average Idling Emissions	0.01	pounds/day
Annual Average Idling Emissions	2.774E-05	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route: 1.175E-03 grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	1.387E-05	grams/sec
Offload area to crusher	1.387E-05	grams/sec

Emission Total	**0.23**	**pounds/day**
	0.0258	**tons/year**

Offroad Haul Truck Maximum Daily Emissions

Maximum Daily Onsite Exhaust Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emissions **1.2**

Increased hours of Operation 4.73 hours/day

Maximum Daily Exhaust Emissions	**121.83**	**grams/day**
Maximum Daily Exhaust Emissions	**0.27**	**pounds/day**
Maximum Daily Exhaust Emissions	**3.760E-03**	**grams/sec**

Maximum Daily Onsite Idling Emissions

Maximum Daily Idling Emissions	**2.88**	**grams/day**
Maximum Daily Idling Emissions	**0.01**	**pounds/day**
Maximum Daily Idling Emissions	**8.878E-05**	**grams/sec**

Emission Allocation

Exhaust Emissions

All emissions along vehicle route: 3.760E-03 grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	4.439E-05	grams/sec
Offload area to crusher	4.439E-05	grams/sec

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	Comments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.5	0.50	113	338	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	4.5	1.60	128	848	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	4.5	4.50	1,013	3,038	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.5	0.41	76	261	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.3	0.21	38	131	Gasoline 9,500 watt continuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	4.5	1.60	128	848	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	4.5	4.50	1,013	3,038	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	4.5	4.50	1,013	3,038	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	4.5	1.60	128	848	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	4.5	4.50	1,013	3,038	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	4.5	4.50	1,013	3,038	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	1.5	1.23	228	783	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	4.5	4.50	1,013	3,038	
11	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	4.5	4.50	1,013	3,038	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	2.0	0.22	6	106	Limited Use
				4572.1			21,543					9,957	31,499	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	400,000
Increase Fraction	0.5

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	PM2.5 g/bhp-hr	Load Factor	Increased Hours/Year	HP x PM2.5 Factor	Weighted Avg PM2.5/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	0	0.108	0.44	113	32	0.00	1,604		0.00
2	HITACHI	EX700H Excavator	1991	450	0	0.108	0.38	128	49	0.00	2,364		0.01
3	CAT	CAT 980G Loader	2001	300	2	0.088	0.36	1,013	26	0.01	9,623		0.02
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	0.28	0.31	76	13	0.00	317		0.00
5	BOBCAT	250 WELDER	2008	12.5	3	0.28	0.45	38	4	0.00	60		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	0	0.38	1,013	0	0.00	0		0.00
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	0.088	0.38	128	40	0.00	1,943		0.00
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	0.192	0.37	1,013	13	0.02	4,805		0.02
9	GENIE	10,000 LB LIFT	2007	82	2	0.192	0.2	1,013	16	0.02	3,188		0.02
10	KOMATSU	ROCK TRUCK	2010	385	3	0	0.38	1,013	0	0.00	0		0.00
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	0.088	0.38	128	17	0.00	843		0.00
12	CAT	980H WHEEL LOADER	2007	355	3	0.088	0.36	1,013	31	0.01	11,387		0.03
13	CAT	980M WHEEL LOADER	2015	378	4	0.008	0.36	1,013	3	0.00	1,102		0.00
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	0.008	0.38	228	1	0.00	121		0.00
15	BOBCAT	SKID STEER S570	2017	66.8	4	0.008	0.37	1,013	1	0.00	200		0.00
16	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	0.008	0.5	1,013	3	0.00	1,689		0.00
17	GROVE	RT74 CRANE	1988	200	0	6.9	0.29	0	1,380	0.00	0		0.00
				4272.1		**8.444**		**9,951**	**1,630**	**0.07**	**39,246**		**0.11**
Fleet Average for ARB Offroad Fleet Reg Compliance									0.38		**Trucks**		

	Annual PM2.5 Emissions (grams/year)	Annual PM2.5 Emissions (pounds/year)	Daily PM2.5 Emissions (pounds/day)	Annual Average PM2.5 Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	17,383	38.29	0.17	8.942E-04
Equipment Operating at the haul truck location (highliighted in blue)	21,863	48.16	0.21	1.125E-03
Total (based on increased number of project hours)	39,246	86.45	0.38	2.019E-03
		0.043	**tons/year**	

Factor to Convert Annual Daily Average to Maxximum DailyEmissons	1.2	
Hours of Operation	9	hours/day

	Maximum Daily PM2.5 Emissions (pounds/day)	Maximum Daily PM2.5 Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	0.20	2.861E-03
Equipment Operating at the haul truck location (highliighted in blue)	0.26	3.599E-03
Total (based on increased number of project hours)	0.46	6.460E-03

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Year: **2020**
Pollutant: **PM2.5 Exh**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	*4*	2	1	2	*4*	8.0	80.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.

Daily Operations 9 hours

Emission Factor to Convert Annual Daily Average Emissions' to Maximun **1.2**

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 0.2577 g/mi in Tulare County for 2020 (average from 5 to 15 mph)

Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)

Daily Average Emissions	20.62	grams/day
Daily Average Emissions	0.05	pounds/day
Annual Average Emissions	2.386E-04	grams/sec

Daily Maximum Onsite Exhaust Emissions

Maximum Daily Exhaust Emissions	24.7	grams/day
Maximum Daily Exhaust Emissions	0.054	pounds/day
Maximum Daily Exhaust Emissions	6.364E-04	grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)

Emission Factor g/mile T7 Construction	0.0627	g/hr in Tulare County for 2020	
Daily Average Emissions	0.251	grams/day	
DailyAverage Emissions	0.001	pounds/day	
Annual Average Emissions	2.902E-06	grams/sec	averaged over all hours of the year

Average Daily Onsite Idle Emissions

Maximum Daily Idling Emissions	0.30	grams/day
Maximum Daily Idling Emissions	0.00	pounds/day
Maximum Daily Idling Emissions	7.740E-06	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	1.238E-06	grams/sec
Travel emissions along the Onroad onsite haul truck route	1.665E-06	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 2.902E-06 grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad truck route and 1 truck covers the onroad haul truck toure

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Exhaust Emissions Allocated along each route

Travel emissions along the offroad haul truck route	2.713E-04	grams/sec
Travel emissions along the Onroad onsite haul truck route	3.650E-04	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 7.740E-06 grams/sec

Emission Total	**0.046**	**pounds/day**
	0.0052	**tons/year**

Deer Creek Mine Expansion - Tulare County

2020 Project Development @ 400,000 tons/year

Average Daily Onsite Emission Estimates for Work Vehicles

Year: 2020
Pollutant: PM2.5 Exh

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***1.6***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Factor to Convert Annual Average Daily Emissions to Maximum Daily Emissio 1.2

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	6.4	miles/day
EMFAC2017 Exhaust Emission Factor	0.110	g/mile
Averge Daily Exhaust Emissions	0.70	g/day
Averge Daily Exhaust Emissions	0.002	pounds/day
Annual Average Exhaust Emissions	8.140E-06	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.78	g/hr
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	5.43	grams/day
Average Daily Idling Emissions	0.012	pounds/day
Annual Average Idling Emissoins	6.288E-05	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT1

Maximum Daily Exhaust Emissions	0.844	grams/day
Maximum Daily Exhaust Emissions	0.002	pounds/day
Maximum Daily Exhaust Emissions	2.605E-05	grams/sec
Maximum Daily Idling Emissions	6.520	grams/day
Maximum Daily Idling Emissions	0.014	pounds/day
Maximum Daily Idling Emissions	2.012E-04	grams/sec

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	3.2	miles/day
EMFAC2017 Exhaust Emission Factor	0.105	g/mile
Averge Daily Exhaust Emissions	0.33	g/day
Averge Daily Exhaust Emissions	0.001	pounds/day
Annual Average Exhaust Emissions	3.871E-06	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.77	g/hr
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	2.68	grams/day
Average Daily Idling Emissions	0.006	pounds/day
Annual Average Idling Emissoins	3.105E-05	g/sec averaged over the entire year
Total Emissions	0.020	

Maximum Daily Repair Truck Onsite Emissions - LHDT2

Maximum Daily Exhaust Emissions	0.401	grams/day
Maximum Daily Exhaust Emissions	0.0009	pounds/day
Maximum Daily Exhaust Emissions	1.239E-05	grams/sec
Maximum Daily Idling Emissions	3.219	grams/day
Maximum Daily Idling Emissions	0.0071	pounds/day
Maximum Daily Idling Emissions	9.936E-05	grams/sec

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	3.551E-05	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	3.551E-05	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area and	4.697E-05	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	4.697E-05	grams/sec

Emission Total	**0.020**	**pounds/day**
	0.0023	**tons/year**

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Maximum Daily Exhaust Emissons along onroad-offroad haul truck route:	1.922E-05	grams/sec
Maximum Daily Exhaust Emissons along offroad haul truck route:	1.922E-05	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area anc	1.503E-04	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	1.503E-04	grams/sec

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: TULARE
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM2.5_Total	PM2.5_RunEx	PM2.5_TW	PM2.5_BW
TULARE	2020	T7 tractor	Aggregated	5	DSL	0.2479	0.2129	0.0090	0.0260
TULARE	2020	T7 tractor	Aggregated	10	DSL	0.2137	0.1787	0.0090	0.0260
TULARE	2020	T7 tractor	Aggregated	15	DSL	0.1593	0.1243	0.0090	0.0260
TULARE	2020	T7 tractor	Aggregated	20	DSL	0.1220	0.0870	0.0090	0.0260
TULARE	2020	T7 tractor	Aggregated	25	DSL	0.1070	0.0720	0.0090	0.0260

Average Emission Factors (g/mile) 5 mph to 15 mph

	PM2.5_RUNEX
T7 tractor	0.2070

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	PM2.5 IDLEX emission_rate
2020	Annual	Tulare (SJV)	T7 tractor	Dsl	NOx	0.067

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM2.5_Total	PM2.5_RunEx	PM2.5_TW	PM2.5_BW
TULARE	2020	T7 single construction	Aggregated	5	DSL	0.310	0.2747	0.009	0.026
TULARE	2020	T7 single construction	Aggregated	10	DSL	0.266	0.2315	0.009	0.026
TULARE	2020	T7 single construction	Aggregated	15	DSL	0.197	0.1620	0.009	0.026

Average (5-15mph)
PM2.5_RUNEX
0.258

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	PM2.5_IDLEX
2020	Annual	Tulare (SJV)	T7 Single Construction	Dsl	IDLEX	0.063

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM2.5_Total	PM2.5_RunEx	PM2.5_TW	PM2.5_BW
TULARE	2020	LHD1	Aggregated	5	DSL	0.134	0.098	0.003	0.033
TULARE	2020	LHD1	Aggregated	10	DSL	0.107	0.071	0.003	0.033
TULARE	2020	LHD1	Aggregated	15	DSL	0.089	0.053	0.003	0.033
					Average 5-15mpl	0.110			
TULARE	2020	LHD2	Aggregated	5	DSL	0.124	0.083	0.003	0.038
TULARE	2020	LHD2	Aggregated	10	DSL	0.102	0.061	0.003	0.038
TULARE	2020	LHD2	Aggregated	15	DSL	0.087	0.046	0.003	0.038
					Average 5-15mpl	0.105			

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	PM2.5_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	0.78
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	0.77

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year
Summary of Emissions

Year: **2020**

Pollutant: **PM2.5 Fugitive Dust**

Emission Factor to Convert Annunal Daily Average Emissions to Maximum DailyEmissio 1.2

Source	Annual Ave pounds/day	Total tons/year	Max Daily (pounds/day)
OnRoad Onsite Haul Trucks - Fugitive Dust Emissions	2.12	0.24	2.54
Offroad Trucks - Fugitive Dust Emissions	2.30	0.26	2.76
Storage Piles - Fugitive Dust	0.61	0.07	0.73
Wind Erosion - Fugitive Dust	0.68	0.08	0.82
Truck Loading - Fugitive Dust	0.10	0.01	0.12
Permitted Sources	2.72	0.31	3.26
Blasting	0.00	0.0070	0
Total	8.52	0.96	10.23

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year
AERMOD Emission Sources

Year: 2020
Pollutant: PM2.5 Fugitive Dust
Annual Average Emissions

Source ID	Source Component	Average Daily Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Tyle
EOnOnHaul	Onroad, Onsite Haul Trucks, Unpaved Road Dust	1.11E-02	Line-Volume	3.559E-02	Line-Volume
EOffHaul	Offroad Haul Trucks, Unpaved Road Dust	1.208E-02	Line Volume	3.865E-02	Line Volume
Spiles	Storage Piles Fugitive Dust	1.128E-06	Circular Area	3.250E-06	Circular Area
Permit1	Fugitive Dust at the Offroad Truck Unloading Area	7.143E-03	Point	4.571E-02	Point
Permit2	Fugitive Dust at the Excavation Area (Truck loading, boring, blasting, and wind erosion)	1.117E-02	Point	5.801E-02	Point
Matload	Loading of Onroad Haul Trucks	2.644E-04	Point	8.460E-04	Point

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Year: 2020
Pollutant: **PM2.5 Fugitive Dust**

Annual Average Onsite Project Incremental Unpaved Road Dust Emissions from On-Road Haul Trucks

Average Daily Haul Trucks	71	trucks/day
Onsite Round trip Distance	0.7	miles
Average Vehicle Speed	10	mph
Operational Day	9	hours

Emission Factor: $E = k\,(s/12)^a (W/3)^b$

	k (constant PM2.5)	s (% silt content)	W (vehicle Weight tons)	PM2.5 EF (lbs/vmt)
Loaded Trucks 40 tons	0.15	5	40	0.2188
Unloaded Trucks 15 tons	0.15	5	15	0.1407
Average				0.1094

Annual VMT	11160	miles/year
Annual PM10 Fdust Emissions	1221.1	pounds/year
(Unmitigated)	0.6	tons/year
Annual PM10 FDust Emissions	**476.2**	**pounds/year**
(Mitigated)	**0.2**	**tons/year**
	2.1	**pounds/day**

3x Water Control

Average PM10 Fdust Emissions 1.112E-02 grams/sec averaged over all hours of the year

Conversion of Average Daily Emissions to Maximum Daily Emissions: 1.2

Maximum Daily Number of Truck	85	trucks/day
Max Daily VMT	59.52	miles/day
Max Daily PM10 FDUST	6.5	pounds/day (Unmitigated)
Max Daily PM10 FDUST	2.54	pounds/day (mitigated) (3x water control)

Max Daily PM10 FDUST 3.559E-02 grams/sec

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	114		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	1,200,000	114	blasts/yr
Increased Blasts from Project/Yr		38	

Emission Factors

	PM10 (kg/Mg)
Wet Drilling Unfragmented Stone	0.00004

PM10 EF = 0.000014(A)^(1.5)(0.52) , where A = horizontal area in ft2 with a scaling factor for <10um of 0.52
PM2.5 EF = 0.000014(A)^(1.5)(0.03) , where A = horizontal area in ft2 with a scaling factor for <2.5um of 0.03
Source of PM2.5 drilling: 18.5 percent of PM10 emissions, according to the values for controlled tertiary crushing in Table 11.19.2-1 from U.S.

PM2.5 Dust Emission Factor (lbs/blast) 0.003483266

Dust Emissions

		PM2.5 EF (lbs/blast)	**PM2.5 Emissions (Lbs/day)**	**PM2.5 Emissions (tons/year)**
Baseline	Blasting	0.0035	0.0035	0.0001
	Drilling	0.12	0.1200	0.0045
	Total		**0.1235**	**0.0047**
With Project	Blasting	0.0035	0.0035	0.0002
	Drilling	0.12	0.1200	0.0068
	Total		**0.1235**	**0.0070**
Net Increase from Project	Blasting and Drilling		0.0000	**0.0023**
				6.737E-05 g/sec averaged over all hours of year

Daily rates are unchanged since the number of blasts per day would not change.
Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explosives)
5 tons of ANFO/blast

Deer Creek Mine Expansion - Tulare Count 2020 Project Development @ 400,000 tons/year

Year: 2020
Pollutant: **PM2.5 Fugitive Dust**

Annual Average Onsite Project Incremental Exhaust Emissions

Days of Operation	225	days/year		
Number of Trucks	2	trucks		
Average Truck Speed	5	mph		
Increased Hours of Operation	3.9	hours/day		
Trip Distance	830	meters or	0.52	miles
Travel Time	0.103	hrs/trip		
Daily Trips	38	trips/day/truck		
	76	trips/day for 2 trucks		
Facility Operations	9	hours/day		

Emission Factor: $E = k\,(s/12)^a (W/3)^b$

	k (constant PM2.5)	s (% silt content)	W (vehicle Weight tons)	PM2.5 EF (lbs/vmt)
Loaded Trucks 80 tons	0.15	5	80	0.2989
Unloaded Trucks 40 tons	0.15	5	40	0.2188
Average				0.1495

Annual VMT	8871	miles/year
Annual PM2.5 Fdust Emissions	1326	pounds/year
(Unmitigated)	0.7	tons/year
Annual PM2.5 FDust Emissions	**517.1**	**pounds/year**
(Mitigated)	**0.3**	**tons/year**
	2.3	**pounds/day**

Average PM2.5 Fdust Emissions **1.208E-02** **grams/sec averaged over all hours of the year**

Factor to convert average emssions to maximum emissions: **1.2**

Maximum Daily VMT	47	miles/day
Maximun Daily PM2.5 FDUST	7.07	pounds/day (unmitigated)
Maximun Daily PM2.5 FDUST	0.10	grams/sec (unmitigated)
Maximum Daily PM10 FDUST	2.76	pounds/day (mitigated) (3x watering)

Maximun Daily PM2.5 FDUST **3.865E-02** **grams/sec (mitgated)**

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Storage Piles

	PM2.5 EF (lb/acre/day)	Control Efficiency	Pile Size (acres)	PM2.5 FDust lb/hour	lb/day	tons/year
Existing Storage Piles	3.9	0.39	0.8	0.12	1.22	0.14
Storage Piles with Project	3.9	0.39	1.2	0.18	1.83	0.21
Increase From Project	3.9	0.39	0.4	0.06	0.61	**0.07**

Pile Size (Increase from Project) 0.4 acres or 2833 m2

Average PM2.5 Fdust Increase 0.61 pounds/day (mitigated)
Average PM2.5 Fdust Increase 0.00320 grams/sec averaged over all hours of the year
Average PM10 Fdust Increase 1.128E-06 gram/m2-sec area source emission rate

Factor to convert average emissions to maximum emisison 1.2

Maximum Daily PM2.5 Fdust Increa 3.250E-06 grams/m2-sec

US EPA AP-42, Section 11.9, Western Surface Coal Mining, Table 11.9-1: http://www.epa.gov/ttnchie1/ap42/ch11/final/c11s09.pdf
The emission factor is 0.72*u for TSP; the "u" refers to the wind speed, which is an average of 4.5 knots (2.3 meters per second or 5.2 miles per hour)

TSP (<=30 mm) = 0.72 x u lb TSP/acre-hr: Where u (wind speed) = 5.2 mph
0.72 x 5.2 = 3.74 lb TSP/acre-hr
PM10 = TSP x SF: Where SF (Scaling Factor) = 0.19
PM10 = 3.74 x 0.19 = 0.79 lb PM10/acre-hr x 10 operating hrs/day = 7.1 lb PM10/acre-day
PM2.5 = TSP x SF: Where SF (Scaling Factor) = 0.105
PM2.5 = 3.74 x 0.105 = 0.39 lb PM2.5/acre-hr x 10 operating hrs/day = 3.9 lb PM2.5/acre-day
A scaling factor for active storage pile PM10 was not provided in AP-42 Table 11.9-1. Therefore, a scaling factor was derived as follows:
The scaling factor for PM10 for bulldozing overburden (0.75 x PM15) was used as a basis. Since the scaling factor for bulldozing overburden is to be applied to the corresponding PM15 emission factor and since there is no data provided for PM15 for the active storage pile emissions, a PM15 value was estimated for the active storage piles using the ratio of PM15 to TSP provided for bulldozer overburden as follows
Bulldozing overburden TSP = 5.7 (s)1.2 / M1.3 lb/hr, where s (silt content) = 6.9%, and M (moisture content) = 7.9%.
Bulldozing overburden TSP = 5.7 x 6.91.2 / 7.91.3 = 3.94 lb/hr
Bulldozing overburden PM15 = 1.0 (s)1.5 / M1.4 lb/hr
Bulldozing overburden PM15 = 1.0 x 6.91.5 / 7.91.4 = 1.00 lb/hr
The ratio of PM15 to TSP = 1.00/3.94 = 0.25
Applying the PM15 to TSP ratio and PM10 scaling factor based on bulldozing overburden, a scaling factor for the active storage pile PM10 is estimated as 0.25 x 0.75 = 0.19.
The scaling factor for PM2.5 is 0.105, as defined in AP-42 Table 11.9-1, dated July 1998, and is applied to the TSP equation as noted in the referenced table
Assumes water spray for dust suppression at three per day and 61% emission reduction

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Wind Erosion

	Area (acres)	Emission Factor (tons/acre/year TSP	PM2.5 Emissions	PM2.5 Emissions lbs/hour	lb/day	tons/year
Existing	0.39	0.38	0.01178	0.0010	0.0252	0.0046
With Project	0.73	0.38	0.01178	0.0020	0.0471	0.0086
Increase from Project	0.34	0.38	0.01178	0.0009	0.0219	0.0040

Exposed Area 0.34 acres or 1376 m2

Average PM2.5 Fdust Increase 1.153E-04 grams/sec averaged over all hours of the year

Factor to Convert Averager Emissions to Maximum Emssions 1.2

Maximum PM2.5 Fdust Increase 5.766E-06 grams/sec

Exposed area is assumed to be the proposed aggregate processing area, but not the drilling and blasting area consisting of rock surface.
Exposed areas are assumed to be the areas of the pit that are exposed, where topsoils are removed and drilling and blasting occur, as well as berms and benchs prior to stabilization.
Topsoils are removed and drilling and blasting occur, as well as berms and benchs prior to stablization. Since it is assumed that 17,000 square feet (0.39 acres) are disturbed for each blast and there are a maximum of 45 blasts per year, then 0.39 acres is assumed to be disturbed at any given time. Areas that are not disturbed consist of hard rock and have negligible potential for wind erosion.
Emission factor for PM2.5 from US EPA AP-42, Table 11.9-4 for total suspeded particulates (TSP). It is assumed that PM2.5 is 60% of TSP and PM2.5 is 3.1%, according to information in Table 11.9-2 for grading.
It is assumed that the daily and hourly estimates are over the entire year
The increase in area exposed is assumed to be proportional to the increase in annual throughput

Truck Loading to Off-Road 40 ton/load Haul Trucks

	Material Loaded (tons/year)	Emission Factors (lbs/ton) PM2.5	PM2.5 Emisions lbs/hour	lb/day	tons/year
Loading from Existing Ops	800,000	0.0000283	0.01	0.10	0.01
Loading with Project	1,200,000	0.0000283	0.02	0.15	0.02
Increase from Project	**400,000**	**0.0000283**	**0.01**	**0.05**	**0.01**

	PM2.5 EF (lb/acre/day)	Control Efficiency	Pile Size (acres)	PM2.5 Emissions lb/hour	lb/day	tons/year
Existing Storage Piles	3.9	0.39	0.8	0.12	1.22	0.14
Storage Piles with Project	3.9	0.39	1.2	0.18	1.83	0.21
Increase From Project	3.9	0.39	0.4	0.06	0.61	0.07

	Area (acres)	Emissions Factors (tons/acre/year) TSP	PM2.5	PM2.5 Emissions lbs/hour	lb/day	tons/year
Existing	0.39	0.38	0.01178	0.0010	0.0252	0.0046
With Project	0.73	0.38	0.01178	0.0020	0.0471	0.0086
Increase from Project	0.34	0.38	0.01178	0.0009	0.0219	0.0040

Total Fugitive Dust

	PM2.5	PM2.5 lb/day	Average Emission (grams/sec)
Existing	0.15	1.34	
With Project	0.23	2.02	
Increase from Project	0.08	0.68	**3.577E-03**

Factor to convert average emisions to maximmum emissions **1.20**

Maximum Daily Emissions 1.145E-02 grams/sec

Emission Total 0.0821 tons/year

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Truck Loading Dust

Truck Loading to On-Road 25 ton/load Haul Trucks

	Material Loaded (tons/year)	Emission Factors PM2.5	PM2.5 Emisions lbs/hour	lb/day	tons/year
Loading from Existing Ops	800,000	0.0000283	0.01	0.10	0.01
Loading with Project	1,200,000	0.0000283	0.02	0.15	0.02
Increase from Project	**400,000**	**0.0000283**	**0.01**	**0.05**	**0.01**

OPerational Hours 9 hours/day

Average PM2.5 FDust Increase 2.644E-04 grams/sec averaged over all hours of the year

Factor to convert average emissions to maximum emissions 1.2

Maximum Daily PM2.5 Emissions 8.460E-04 grams/sec

Truck Loading to Off-Road 40 ton/load Haul Trucks

	Material Loaded (tons/year)	Emission Factors PM2.5	PM2.5 Emisions lbs/hour	lb/day	tons/year
Loading from Existing Ops	800,000	0.0000283	0.01	0.10	0.01
Loading with Project	1,200,000	0.0000283	0.02	0.15	0.02
Increase from Project	**400,000**	**0.0000283**	**0.01**	**0.05**	**0.01**

Average PM2.5 FDust Increase 2.644E-04 grams/sec averaged over all hours of the year

Factor to convert average emissions to maximum emissions 1.2

Maximum Daily Emssions 8.460E-04 grams/sec

The PM10 emission factor is 0.0000460 lb/ton and the emission factor for PM2.5 is 0.0000130 lb/ton. The ratio of PM2.5 to PM10 is 0.0000130/0.0000460 = 0.283.
Since the PM10 emission factor is estimated to be 0.00010 lb/ton, the emission factor for PM2.5 is estimated to be 0.0001 x 0.283 lb/ton
Emission factor for PM10 is from EPA AP-42, Table 11.19.2-2 (Emission Factors for Crushed Stone Processing Operations). Website: http://www.epa.gov/ttnchie1/ap42/ch11/final/c11s1902.pdf

based on AP-42 11.19.2, Final Section, updated August 2004. The PM10 emission factor 0.000046 lb/ton and the emission factor for PM2.5 to PM10 is 0.000013/0.000046 = 0.283.
Since the PM10 emission factor is estimated to be 0.0001 lb/ton, the emission factor for PM2.5 is estimated to be 0.0001 x 0.283 = 0.0000283 lb/ton
- Assumes 225 days/year and 9 hours/day

Emissions Total 0.01 tons/year

Deer Creek Mine Expansion - Tulare Cour 2020 Project Development @ 400,000 tons/year

Permitted Equipment

Operational Hours 9 hours/day

Emissions from Permitted Equipment

	Throughput (tons/year)	PM2.5 dust (lbs/day)	PM2.5 dust (tons/year)
Existing Baseline Emissions	800,000	6.58	0.74
Permit Limit	1,200,000	9.30	1.05
Increase from Baseline from Project	400,000	2.72	**0.31**

Average PM2.5 FDust Increase	**1.43E-02**	**grams/sec averaged over all hours of the year**

Assume 1/2 Emissions Occur at the Excavation Area	**7.143E-03**	**grams/sec**
Assume 1/2 Emissions Occur at the Offroad Unloading Area	**7.143E-03**	**grams/sec**

Factor to Convert Average Emissions to Maximum Emission **1.2**

Assume 1/2 Emissions Occur at the Excavation Area	**4.571E-02**	**grams/sec**
Assume 1/2 Emissions Occur at the Offroad Unloading Area	**4.571E-02**	**grams/sec**

Project currently operating at 53% of Permitted Emission Limits
With Project the facility would operate at permitted limits.
SJVAPCD Permit S-4136-3-6

Source of PM2.5 dust: 18.5 percent of PM10 emissions, according to the values for controlled tertiary crushing in Table 11.19.2-1 from the USEPA AP-42 Section 11.19.2, Crushed Stone Processing and Pulverized Material Processing
Source of PM2.5 exhaust: CalEEMod manual (Appendix D, table 3.5) indicates PM2.5 is the same as PM10
Source of other values: San Joaquin Valley Air Pollution Control District, Authority to Construct

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Summary of Emissions **ONSITE ONLY**

Year: **2020**
Pollutant: **DPM (as PM10)**

Source	Annual Total Exhaust tons/year
Drilling amd Blasting	0.000
Offroad Equipment	0.043
Water Trucks	0.005
Work Trucks -	0.002
OnRoad Onsite Haul Trucks -	0.003
Offroad Haul Trucks	0.026
Employee Commute	0.000
Unpaved Road Dust (fugitive dust)	0.000
Dust (loading, wind, storage piles, unpaved roads)	0.000
Permitted Sources	0.000
Total Project Emissions	0.079

Deer Creek Mine Expansion - Tulare County

2020 **Project Development @ 400,000 tons/year**

AERMOD Emission Sources

Year: **2020**
Pollutant: **DPM (as PM10)**
Annual Average Emissions

Source ID	Source Component	Annual Average Emissions Emissions (g/sec)	Source Tyle
EONOFF	**Onroad Haul Trucks, Offsite**	**8.100E-05**	Line Volume
EOnOnHaul	Onroad, Onsite Haul Trucks, Exhaust	1.03E-04	Line-Volume
	Water Trucks, Exhaust	1.29E-06	
	Work Trucks.Exhaust	4.09E-06	
	Total	**1.09E-04**	
EOffHaul	Offroad Haul Trucks,Exhaust	1.175E-03	Line Volume
	Water Trucks.Exhaust	1.294E-06	
	Work Trucks,Exhaust	4.090E-06	
	Total	**1.180E-03**	
Iscale	Onroad, Onsite Haul Trucks, Idle	**2.860E-05**	Point
	(Scale @ Entrane/Scale@ Exit		
Imaint	Maintenance Area Work Truck,Idle	4.909E-05	Point
	Maintenance Area Water Truck, Idle	3.034E-06	
	Total	**5.212E-05**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	1.430E-05	Point
	Onsite Equipment, Operations	8.942E-04	
	Total	**9.085E-04**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	1.450E-05	point
	Excavation Area, Work Truck, Idle	4.909E-05	
	Onsite Equipment, Operations	1.125E-03	
	Blasting	0.000E+00	
	Total	**1.188E-03**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**1.450E-05**	point

.

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Onroad Onsite Average Daily Haul Truck Emissions

Year: 2020
Pollutant: DPM (as PM10)

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	***71***	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	0.180	g/mi in Tulare County for 2020 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**8.9**	grams/day
Daily Exhaust Emissions	**0.02**	pounds/day
Annual Exhaust Emissions	**1.032E-04**	grams/sec averaged over all hours of the year

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	71	trucks/day
EMCAC2017 Idling Emission Factor	0.070	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**3.71**	g/day
Daily Idling Emissions	**0.01**	pounds/day
Annual Idling Emissions	**4.291E-05**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Average Daily Offsite Project Incremental Exhaust Emissions

Average Daily Haul Trucks	***71***	trucks/day
Onsite Round trip Distance	0.7	miles (roundtrip)
Average Vehicle Speed	5 to 25	mph
EMFAC2017 RUNEX Emission Factor	0.141	g/mile in Tulare County for 2020 (Average 5 to 25 mph)
Days of Operation	225	days/year

Daily ExhaustEmissions	**7.0**	grams/day
Daily Exhaust Emissions	**0.015**	pounds/day
Annual Exhaust Emission	**8.100E-05**	averaged over all hours of the year

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**1.032E-04**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**1.430E-05**	**grams/sec**
Material Loading	**1.430E-05**	**grams/sec**
Weight Scale @ Exit	**1.430E-05**	**grams/sec**

Onroad Offsite Exhaust Emissions

All emissions along vehicle route	**8.100E-05**	**grams/sec**

Emission total	**0.03**	**pounds/day**
	0.0031	**tons/year**

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/y

Offroad Haul Truck Daily Average Daily Emissions

Year: 2020
Pollutant: **DPM (as PM10)** (Unmitigated)

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year		
Number of Trucks	2	trucks		
Average Truck Speed	5	mph		
Increased Hours of Operation	***3.9***	hours/day		
Trip Distance	830	meters or	0.52	miles
Travel Time	0.103	hrs/trip		
Daily Trips	38	trips/day/truck		
	76	trips/day for 2 trucks		
CalEEMod Exhaust Emission Factor	0.09	g/hp-hr (Tier 3)		
Equipment Size	385.00	hp		
Load Factor	0.38			
Work Day	9	hours/day		

Daily Average Exhaust Emissions	101.52	grams/day
Daily Average Exhaust Emissions	0.22	pounds/day
Annual Average Exhaust Emissions	1.175E-03	grams/sec averaged over the entire year

Average Daily Osite Project Incremental Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	76	events
EMCAC2017 Idling Emission Factor	0.066	g/hr in Tulare County for 2020
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	2.51	grams/day
Daily Average Idling Emissions	0.01	pounds/day
Annual Average Idling Emissions	2.900E-05	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	1.175E-03	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	1.450E-05	grams/sec
Offload area to crusher	1.450E-05	grams/sec

Emission Total	**0.23**	**pounds/day**
	0.026	**tons/year**

ear

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	Comments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.5	0.50	113	338	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	4.5	1.60	128	848	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	4.5	4.50	1,013	3,038	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.5	0.41	76	261	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.3	0.21	38	131	Gasoline 9,500 watt continuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	4.5	1.60	128	848	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	4.5	4.50	1,013	3,038	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	4.5	4.50	1,013	3,038	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	4.5	1.60	128	848	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	4.5	4.50	1,013	3,038	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	4.5	4.50	1,013	3,038	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	1.5	1.23	228	783	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	4.5	4.50	1,013	3,038	
11	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	4.5	4.50	1,013	3,038	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	2.0	0.22	6	106	Limited Use
				4572.1			21,543					9,957	31,499	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	400,000
Increase Fraction	0.5

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	DPM g/bhp-hr	Load Factor	Increased Hours/Year	HP x DPM Factor	Weighted Avg DPM/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	0	0.108	0.44	113	32	0.00	1,604		0.00
2	HITACHI	EX700H Excavator	1991	450	0	0.108	0.38	128	49	0.00	2,364		0.01
3	CAT	CAT 980G Loader	2001	300	2	0.088	0.36	1,013	26	0.01	9,623		0.02
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	0.28	0.31	76	13	0.00	317		0.00
5	BOBCAT	250 WELDER	2008	12.5	3	0.28	0.45	38	4	0.00	60		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	0	0.38	1,013	0	0.00	0		0.00
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	0.088	0.38	128	40	0.00	1,943		0.00
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	0.192	0.37	1,013	13	0.02	4,805		0.02
9	GENIE	10,000 LB LIFT	2007	82	2	0.192	0.2	1,013	16	0.02	3,188		0.02
10	KOMATSU	ROCK TRUCK	2010	385	3	0	0.38	1,013	0	0.00	0		0.00
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	0.088	0.38	128	17	0.00	843		0.00
12	CAT	980H WHEEL LOADER	2007	355	3	0.088	0.36	1,013	31	0.01	11,387		0.03
13	CAT	980M WHEEL LOADER	2015	378	4	0.008	0.36	1,013	3	0.00	1,102		0.00
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	0.008	0.38	228	1	0.00	121		0.00
15	BOBCAT	SKID STEER S570	2017	66.8	4	0.008	0.37	1,013	1	0.00	200		0.00
16	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	0.008	0.5	1,013	3	0.00	1,689		0.00
17	GROVE	RT74 CRANE	1988	200	0	0.108	0.29	0	22	0.00	0		0.00
				4272.1		**1.652**		**9,951**	**271**	**0.07**	**39,246**		**0.11**
Fleet Average for ARB Offroad Fleet Reg Compliance									0.06		**Trucks**		

	Annual DPM Emissions (grams/year)	Annual DPM Emissions (pounds/year)	Daily DPM Emissions (pounds/day)	Annual Average DPM Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	17,383	38.29	0.17	8.942E-04
Equipment Operating at the haul truck location (highliighted in blue)	21,863	48.16	0.21	1.125E-03
Total (based on increased number of project hours)	39,246	86.45	0.38	2.019E-03

0.0432 tons/year

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Year: **2020**
Pollutant: **NOx**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	*4*	2	1	2	*4*	8.0	80.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.
Emission Factor to Convert Annual Daily Average Emissions' to Maximum Daily Emissi 1.2
Daily Operations 9 hours

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 0.2328 g/mi in Tulare County for 2020 (average from 5 to 15 mph)
Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)
Daily Average Emissions 18.62 grams/day
Daily Average Emissions 0.04 pounds/day
Annual Average Emissions 2.155E-04 grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)
Emission Factor g/mile T7 Construction 0.0655 g/hr in Tulare County for 2020
Daily Average Emissions 0.262 grams/day
DailyAverage Emissions 0.001 pounds/day
Annual Average Emissions 3.034E-06 grams/sec averaged over all hours of the year

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route 0.52 miles
Travel Distance along the Onroad onsite haul truck route 0.70 miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	1.294E-06	grams/sec
Travel emissions along the Onroad onsite haul truck route	1.740E-06	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions :	3.034E-06	grams/sec

Emission Total	**0.042**	**pounds/day**
	0.00467979	**tons/year**

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Year:	2020
Pollutant:	DPM (as PM10)

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	114		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	***1,200,000***	114	blasts/yr
Increased Blasts from Project/Yr		38	

Blasting Emission Factors with ANFO	**DPM (lbs/ton)**
	0

Average Daily Emission Calculations

	DPM Emissions (lbs/year)	DPM Emissions (tons/Yr)	DPM Emissions (pounds/day)	Annual Average DPM Emissions (grams/sec)	Maximum Daily Emissions	
Net Increase from Project	0	0.00	0.00	0.000E+00	0	no change from the base case on a daily nbasis

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explosives)
5 tons of ANFO/blast

Emission Allocation

All blasting emissions will be represented as a point source at the excavation area.

Deer Creek Mine Expansion - Tulare County

2020 Project Development @ 400,000 tons/year

Average Daily Onsite Emission Estimates for Work Vehicles

Year:	**2020**
Pollutant:	**NOx**

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***1.6***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	6.4	miles/day
EMFAC2017 Exhaust Emission Factor	0.077	g/mile
Averge Daily Exhaust Emissions	0.49	g/day
Averge Daily Exhaust Emissions	0.001	pounds/day
Annual Average Exhaust Emissions	5.721E-06	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.81	g/hr
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	5.68	grams/day
Average Daily Idling Emissions	0.013	pounds/day
Annual Average Idling Emissoins	6.573E-05	g/sec averaged over the entire year

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	3.2	miles/day
EMFAC2017 Exhaust Emission Factor	0.066	g/mile
Averge Daily Exhaust Emissions	0.21	g/day
Averge Daily Exhaust Emissions	0.000	pounds/day
Annual Average Exhaust Emissions	2.459E-06	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.80	g/hr
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	2.80	grams/day
Average Daily Idling Emissions	0.006	pounds/day
Annual Average Idling Emissoins	3.245E-05	g/sec averaged over the entire year
Total Emissions	0.020	

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	4.090E-06	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	4.090E-06	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area and	4.909E-05	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	4.909E-05	grams/sec

Emission Total	**0.020**	**pounds/day**
	0.002277	**tons/year**

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: TULARE
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW **DPM (as PM10 Exhaust)**

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	DPM_RUNEX
TULARE	2020	T7 tractor	Aggregated	5	DSL	0.2225
TULARE	2020	T7 tractor	Aggregated	10	DSL	0.1868
TULARE	2020	T7 tractor	Aggregated	15	DSL	0.1299
TULARE	2020	T7 tractor	Aggregated	20	DSL	0.0910
TULARE	2020	T7 tractor	Aggregated	25	DSL	0.0752

Average Emission Factors (g/mile) 5 mph to 15 mph

	DPM_RUNEX
T7 tractor	0.1798

Average Emission Factors (g/mile) 5 mph to 25 mph

	DPM_RUNEX	
T7 tractor	0.1411	g/mile

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	DPM IDLEX emission_rate
2020	Annual	Tulare (SJV)	T7 tractor	Dsl	NOx	0.070

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	DPM_RUNEX
TULARE	2020	T7 single construction	Aggregated	5	DSL	0.287
TULARE	2020	T7 single construction	Aggregated	10	DSL	0.242
TULARE	2020	T7 single construction	Aggregated	15	DSL	0.169

Average (5-15mph)
NOx_RUNEX
0.233

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	DPM_IDLEX
2020	Annual	Tulare (SJV)	T7 Single Construction	Dsl	IDLEX	0.066

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	DPM_RUNEX
TULARE	2020	LHD1	Aggregated	5	DSL	0.102
TULARE	2020	LHD1	Aggregated	10	DSL	0.074
TULARE	2020	LHD1	Aggregated	15	DSL	0.056
					Average 5-15mpl	0.077
TULARE	2020	LHD2	Aggregated	5	DSL	0.087
TULARE	2020	LHD2	Aggregated	10	DSL	0.064
TULARE	2020	LHD2	Aggregated	15	DSL	0.049
					Average 5-15mpl	0.066

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	DPM_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	0.81
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	0.80

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Summary of Emissions **ONSITE ONLY**

Year: **2020**
Pollutant: **ROG**

Source	**Annual Total tons/year**
Drilling amd Blasting	0.000
Offeoad Equipment	0.104
Water Trucks	0.033
Work Trucks -	0.010
OnRoad Onsite Haul Trucks -	0.052
Offroad Haul Trucks	0.768
Employee Commute	0.000
Unpaved Road Dust (fugitive dust)	0.000
Dust (loading, wind, storage piles, unpaved roads)	0.000
Permitted Sources	0.000
Total Project Emissions	0.966

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year
AERMOD Emission Sources

Year: 2020
Pollutant: ROG
Annual Average Emissions

Source ID	Source Component	Annual Average Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Type
EOnOnHaul	Onroad, Onsite Haul Trucks, Exhaust	7.89E-04	Line-Volume	2.525E-03	Line Volune
	Water Trucks, Exhaust	5.15E-05		1.598E-03	
	Work Trucks.Exhaust	3.15E-05		1.008E-04	
	Total	**8.72E-04**		**4.224E-03**	
EOffHaul	Offroad Haul Trucks,Exhaust	3.472E-02	Line Volume	1.111E-01	Line Volume
	Water Trucks.Exhaust	5.147E-05		2.150E-03	
	Work Trucks,Exhaust	3.151E-05		1.008E-04	
	Total	**3.480E-02**		**1.133E-01**	
Iscale	Onroad, Onsite Haul Trucks, Idle	**1.086E-03**	Point	**5.213E-03**	Point
	(Scale @ Entrane/Scale@ Exit				
Imaint	Maintenance Area Work Truck,Idle	1.928E-04	Point	6.170E-04	Point
	Maintenance Area Water Truck, Idle	1.207E-04		3.219E-04	
	Total	**3.135E-04**		**9.389E-04**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	5.430E-04	Point	1.738E-03	Point
	Onsite Equipment, Operations	2.232E-03		7.141E-03	
	Total	**2.775E-03**		**8.879E-03**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	5.769E-04	Point	1.846E-03	Point
	Excavation Area, Work Truck, Idle	1.928E-04		6.170E-04	
	Onsite Equipment, Operations	2.604E-03		8.334E-03	
	Blasting	0.000E+00		0.000E+00	
	Total	**3.374E-03**		**1.080E-02**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**5.769E-04**	Point	**1.846E-03**	Point

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Onroad Onsite Average Daily Haul Truck Emissions

Year: 2020
Pollutant: ROG

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	*71*	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	1.374	g/mi in Tulare County for 2020 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**68.2**	grams/day
Daily Exhaust Emissions	**0.15**	pounds/day
Annual Exhaust Emissions	**7.891E-04**	grams/sec averaged over all hours of the year

Maximum Daily Onsite Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emis **1.2**

Maximum Daily Emissions	81.81	grams/day
Maximum Daily Emissions	0.18	pounds/day
Maximum Daily Emissio	**2.525E-03**	**grams/sec**

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	71	trucks/day
EMCAC2017 Idling Emission Factor	2.648	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**140.75**	g/day
Daily Idling Emissions	**0.31**	pounds/day
Annual Idling Emissions	**1.629E-03**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Maximum Daily Onsite Idling Emissions

Maximum Daily Emissions	168.89	grams/day
Maximum DailyEmissions	0.37	pounds/day
Maximum Daily Emissio	**5.213E-03**	**grams/sec**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**7.891E-04**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**5.430E-04**	**grams/sec**
Material Loading	**5.430E-04**	**grams/sec**
Weight Scale @ Exit	**5.430E-04**	**grams/sec**

Emission Totals	**0.46**	**pounds/day**
	0.052	**tons/year**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**2.525E-03**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**1.738E-03**	**grams/sec**
Material Loading	**1.738E-03**	**grams/sec**
Weight Scale @ Exit	**1.738E-03**	**grams/sec**

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Offroad Haul Truck Daily Average Daily Emissions

Year: 2020
Pollutant: ROG

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year	
Number of Trucks	2	trucks	
Average Truck Speed	5	mph	
Increased Hours of Operation	***3.9***	hours/day	
Trip Distance	830	meters or	0.52 miles
Travel Time	0.103	hrs/trip	
Daily Trips	38	trips/day/truck	
	76	trips/day for 2 trucks	
CalEEMod Exhaust Emission Factor	2.60	g/hp-hr (Tier 3)	
Equipment Size	385.00	hp	
Load Factor	0.38		
Work Day	9	hours/day	

Daily Average Exhaust Emissions	2999.57	grams/day
Daily Average Exhaust Emissions	6.61	pounds/day
Annual Average Exhaust Emission	3.472E-02	grams/sec averaged over the entire year

Average Daily Osite Project Incremental Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	76	events
EMCAC2017 Idling Emission Factor	2.607	g/hr in Tulare County for 2020
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	99.70	grams/day
Daily Average Idling Emissions	0.22	pounds/day
Annual Average Idling Emissions	1.154E-03	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	3.472E-02	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	5.769E-04	grams/sec
Offload area to crusher	5.769E-04	grams/sec

Emission Totals	**6.83**	**pounds/day**
	0.768	**tons/year**

Offroad Haul Truck Maximum Daily Emissions

Maximum Daily Onsite Exhaust Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emissio	1.2	
Increased hours of Operation	4.73	hours/day

Maximum Daily Exhaust Emissions	**3599.48**	**grams/day**
Maximum Daily Exhaust Emissions	**7.93**	**pounds/day**
Maximum Daily Exhaust Emissions	**1.111E-01**	**grams/sec**

Maximum Daily Onsite Idling Emissions

Maximum Daily Idling Emissions	**119.64**	**grams/day**
Maximum Daily Idling Emissions	**0.26**	**pounds/day**
Maximum Daily Idling Emissions	**3.692E-03**	**grams/sec**

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	1.111E-01	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	1.846E-03	grams/sec
Offload area to crusher	1.846E-03	grams/sec

Deer Creek Mine Expansion - Tulare County 2020 Project Development @ 400,000 tons/year

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	ROGmments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.5	0.50	113	338	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	4.5	1.60	128	848	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	4.5	4.50	1,013	3,038	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.5	0.41	76	261	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.3	0.21	38	131	Gasoline 9,500 watt ROGntinuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	4.5	1.60	128	848	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	4.5	4.50	1,013	3,038	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	4.5	4.50	1,013	3,038	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	4.5	4.50	1,013	3,038	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	4.5	1.60	128	848	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	4.5	4.50	1,013	3,038	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	4.5	4.50	1,013	3,038	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	1.5	1.23	228	783	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	4.5	4.50	1,013	3,038	
11	ATLAS ROGPROG	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	4.5	4.50	1,013	3,038	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	2.0	0.22	6	106	Limited Use
				4572.1			21,543					9,957	31,499	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	400,000
Increase Fraction	0.5

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	ROG g/bhp-hr	Load Factor	Increased Hours/Year	HP x ROG Factor	Weighted Avg ROG/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	0	0.38	0.44	113	114	0.00	5,643		0.02
2	HITACHI	EX700H Excavator	1991	450	0	0.38	0.38	128	171	0.00	8,317		0.03
3	CAT	CAT 980G Loader	2001	300	2	0.12	0.36	1,013	36	0.01	13,122		0.02
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	0.29	0.31	76	14	0.00	328		0.00
5	BOBCAT	250 WELDER	2008	12.5	3	0.29	0.45	38	4	0.00	62		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	0	0.38	1,013	0	0.00	0		0.00
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	0.12	0.38	128	54	0.00	2,650		0.00
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	0.23	0.37	1,013	15	0.02	5,756		0.01
9	GENIE	10,000 LB LIFT	2007	82	2	0.23	0.2	1,013	19	0.02	3,819		0.01
10	KOMATSU	ROCK TRUCK	2010	385	3	0	0.38	1,013	0	0.00	0		0.00
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	0.12	0.38	128	24	0.00	1,150		0.00
12	CAT	980H WHEEL LOADER	2007	355	3	0.12	0.36	1,013	43	0.01	15,528		0.02
13	CAT	980M WHEEL LOADER	2015	378	4	0.12	0.36	1,013	45	0.01	16,534		0.02
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	0.08	0.38	228	14	0.00	1,214		0.00
15	BOBCAT	SKID STEER S570	2017	66.8	4	0.12	0.37	1,013	8	0.01	3,003		0.00
16	ATLAS ROGPROG	FLEXIROC T50 ROCK DRILL	2011	417	4I	0.08	0.5	1,013	33	0.01	16,889		0.01
17	GROVE	RT74 CRANE	1988	200	0	6.9	0.29	0	1,380	0.00	0		0.00
				4272.1		**9.58**		**9,951**	**1,974**	**0.12**	**94,014**		**0.16**
Fleet Average for ARB Offroad Fleet Reg ROGmpliance									0.46		**Trucks**		

	Annual ROG Emissions (grams/year)	Annual ROG Emissions (pounds/year)	Daily ROG Emissions (pounds/day)	Annual Average ROG Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	43,384	95.56	0.42	2.232E-03
Equipment Operating at the haul truck location (highliighted in blue)	50,631	111.52	0.50	2.604E-03
Total (based on increased number of project hours)	94,014	207.08	0.92	4.836E-03
		0.1035 tons/year		

Factor to ROGnvert Annual Daily Average to Maxximum DailyEmisso	1.2	
Hours of Operation	9	hours/day

	Maximum Daily ROG Emissions (pounds/day)	Maximum Daily ROG Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	0.51	7.141E-03
Equipment Operating at the haul truck location (highliighted in blue)	0.59	8.334E-03
Total (based on increased number of project hours)	1.10	1.548E-02

Deer Creek Mine Expansion - Tulare County

2020 Project Development @ 400,000 tons/year

Year: **2020**
Pollutant: **ROG**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	*4*	2	1	2	*4*	8.0	80.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.
Emission Factor to Convert Annual Daily Average Emissions' to Maximum Daily Emissic 1.2
Daily Operations 9 hours

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 1.5181 g/mi in Tulare County for 2020 (average from 5 to 15 mph)

Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)

Daily Average Emissions	121.45	grams/day
Daily Average Emissions	0.27	pounds/day
Annual Average Emissions	1.406E-03	grams/sec

Daily Maximum Onsite Exhaust Emissions

Maximum Daily Exhaust Emissions	145.7	grams/day
Maximum Daily Exhaust Emissions	0.321	pounds/day
Maximum Daily Exhaust Emissions	3.748E-03	grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)

Emission Factor g/mile T7 Construction	2.6074	g/hr in Tulare County for 2020	
Daily Average Emissions	10.430	grams/day	
DailyAverage Emissions	0.023	pounds/day	
Annual Average Emissions	1.207E-04	grams/sec	averaged over all hours of the year

Average Daily Onsite Idle Emissions

Maximum Daily Idling Emissions	12.52	grams/day
Maximum Daily Idling Emissions	0.03	pounds/day
Maximum Daily Idling Emissions	3.219E-04	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	5.147E-05	grams/sec
Travel emissions along the Onroad onsite haul truck route	6.924E-05	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 1.207E-04 grams/sec

Emission Totals	**0.2905**	**pounds/day**
	0.033	**tons/year**

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad truck route and 1 truck covers the onroad haul truck toure

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Exhaust Emissions Allocated along each route

Travel emissions along the offroad haul truck route	1.598E-03	grams/sec
Travel emissions along the Onroad onsite haul truck route	2.150E-03	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 3.219E-04 grams/sec

Deer Creek Mine Expansion - Tulare County **2020** **Project Development @ 400,000 tons/year**

Year:	2020
Pollutant:	ROG

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	114		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	***1,200,000***	114	blasts/yr
Increased Blasts from Project/Yr		38	

Blasting Emission Factors with ANFO	**ROG (lbs/ton)**	
	0	No emission factor provided in AP42 documentation

Average Daily Emission Calculations

	ROG Emissions (lbs/year)	ROG Emissions (tons/Yr)	ROG Emissions (pounds/day)	Annual Average ROG Emissions (grams/sec)	Maximum Daily Emissions	
Net Increase from Project	0	0.00	0.00	0.000E+00	0	no change from the base case on a daily nbasis

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explosives)
5 tons of ANFO/blast

Emission Allocation

All blasting emissions will be represented as a point source at the excavation area.

Deer Creek Mine Expansion - Tulare County

2020 Project Development @ 400,000 tons/year

Average Daily Onsite Emission Estimates for Work Vehicles

Year: 2020
Pollutant: ROG

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***1.6***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Factor to Convert Annual Average Daily Emissions to Maximum Daily Emissions 1.2

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	6.4	miles/day
EMFAC2017 Exhaust Emission Factor	0.570	g/mile
Averge Daily Exhaust Emissions	3.65	g/day
Averge Daily Exhaust Emissions	0.008	pounds/day
Annual Average Exhaust Emissions	4.226E-05	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	3.17	g/hr
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	22.21	grams/day
Average Daily Idling Emissions	0.049	pounds/day
Annual Average Idling Emissoins	2.571E-04	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT1

Maximum Daily Exhaust Emissions	4.381	grams/day
Maximum Daily Exhaust Emissions	0.010	pounds/day
Maximum Daily Exhaust Emissions	1.352E-04	grams/sec
Maximum Daily Idling Emissions	26.654	grams/day
Maximum Daily Idling Emissions	0.059	pounds/day
Maximum Daily Idling Emissions	8.226E-04	grams/sec

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	3.2	miles/day
EMFAC2017 Exhaust Emission Factor	0.561	g/mile
Averge Daily Exhaust Emissions	1.79	g/day
Averge Daily Exhaust Emissions	0.004	pounds/day
Annual Average Exhaust Emissions	2.076E-05	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	3.17	g/hr
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	11.11	grams/day
Average Daily Idling Emissions	0.024	pounds/day
Annual Average Idling Emissoins	1.285E-04	g/sec averaged over the entire year
Total Emissions	0.085	

Maximum Daily Repair Truck Onsite Emissions - LHDT2

Maximum Daily Exhaust Emissions	2.153	grams/day
Maximum Daily Exhaust Emissions	0.0047	pounds/day
Maximum Daily Exhaust Emissions	6.644E-05	grams/sec
Maximum Daily Idling Emissions	13.327	grams/day
Maximum Daily Idling Emissions	0.0294	pounds/day
Maximum Daily Idling Emissions	4.113E-04	grams/sec

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	3.151E-05	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	3.151E-05	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area and	1.928E-04	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	1.928E-04	grams/sec

Emission Totals	**0.085**	**pounds/day**
	0.010	**tons/year**

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Maximum Daily Exhaust Emissons along onroad-offroad haul truck route:	1.008E-04	grams/sec
Maximum Daily Exhaust Emissons along offroad haul truck route:	1.008E-04	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area anc	6.170E-04	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	6.170E-04	grams/sec

EMFAC2017 (v1.0.2) Emission Rates
Region Type: ROGunty
Region: TULARE
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	ROG_RUNEX
TULARE	2020	T7 tractor	Aggregated	5	DSL	1.9040
TULARE	2020	T7 tractor	Aggregated	10	DSL	1.4363
TULARE	2020	T7 tractor	Aggregated	15	DSL	0.7832
TULARE	2020	T7 tractor	Aggregated	20	DSL	0.4147
TULARE	2020	T7 tractor	Aggregated	25	DSL	0.3035

Average Emission Factors (g/mile) 5 mph to 15 mph

	ROG_RUNEX
T7 tractor	1.3745

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	ROG IDLEX emission_rate
2020	Annual	Tulare (SJV)	T7 tractor	Dsl	ROG	2.648

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	ROG_RUNEX
TULARE	2020	T7 single ROGnstructio	Aggregated	5	DSL	2.113
TULARE	2020	T7 single ROGnstructio	Aggregated	10	DSL	1.596
TULARE	2020	T7 single ROGnstructio	Aggregated	15	DSL	0.845

Average (5-15mph)

ROG_RUNEX
1.518

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	ROG_IDLEX
2020	Annual	Tulare (SJV)	T7 Single ROGnstruction	Dsl	IDLEX	2.607

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	ROG_RUNEX
TULARE	2020	LHD1	Aggregated	5	DSL	0.792
TULARE	2020	LHD1	Aggregated	10	DSL	0.571
TULARE	2020	LHD1	Aggregated	15	DSL	0.349
					Average 5-15mpl	0.570
TULARE	2020	LHD2	Aggregated	5	DSL	0.781
TULARE	2020	LHD2	Aggregated	10	DSL	0.567
TULARE	2020	LHD2	Aggregated	15	DSL	0.333
					Average 5-15mpl	0.561

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	ROG_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	3.17
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	3.17

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

- - - -

**File for Summary of Results: 400000_CO_2020_R3.SUM

♀ *** AERMOD - VERSION 18081 *** *** DEER CREEK MINE EXPANSION PROJECT REV3 *** 07/18/19
*** AERMET - VERSION 18081 *** *** CO - NO MITIGATION 2020 400,000 T/Y THROUGHPUT *** 19:49:49
PAGE 2

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

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NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 18081 *** *** DEER CREEK MINE EXPANSION PROJECT REV3 *** 07/18/19
*** AERMET - VERSION 18081 *** *** CO - NO MITIGATION 2020 400,000 T/Y THROUGHPUT *** 19:49:49
PAGE 3

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\PORTERVILLE_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\PORTERVILLE_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT REV3                    ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** CO - NO MITIGATION 2020 400,000 T/Y THROUGHPUT              ***       19:49:49
                                                                                    PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                          ** CONC OF CO       IN MICROGRAMS/M**3                    **

                                     DATE                                          NETWORK
GROUP ID                    AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS      40.37558  ON 08022508: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT REV3                    ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** CO - NO MITIGATION 2020 400,000 T/Y THROUGHPUT              ***       19:49:49
                                                                                    PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                *** THE SUMMARY OF HIGHEST  8-HR RESULTS ***


                          ** CONC OF CO       IN MICROGRAMS/M**3                    **

                                     DATE                                          NETWORK
GROUP ID                    AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS      6.72926c ON 08022508: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT REV3                    ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** CO - NO MITIGATION 2020 400,000 T/Y THROUGHPUT              ***       19:49:49
                                                                                    PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          6 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


    ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***
```

```
********   WARNING MESSAGES   ********
SO W320    503      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
SO W320    504      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
SO W320    902      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
SO W320    903      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
SO W320    904      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
ME W187   5728      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

- - - -

400000_NOx1_2020_R3
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.9 MB of RAM.

**Input Runstream File: aermod.inp
**Output Print File: aermod.out

**Detailed Error/Message File: 400000_NOX1_2020_R3.ERR
**File for Summary of Results: 400000_NOX1_2020_R3.SUM

♀ *** AERMOD - VERSION 18081 *** *** DEER CREEK MINE EXPANSION PROJECT REV3 *** 07/18/19
*** AERMET - VERSION 18081 *** *** NOX 1-HOUR - NO MITIGATION 2020 400,000 T/Y THROUGHPUT *** 19:50:21
PAGE 2
*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 18081 *** *** DEER CREEK MINE EXPANSION PROJECT REV3 *** 07/18/19
*** AERMET - VERSION 18081 *** *** NOX 1-HOUR - NO MITIGATION 2020 400,000 T/Y THROUGHPUT *** 19:50:21
PAGE 3
*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\PORTERVILLE_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\PORTERVILLE_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0

```
06 01 01   1 18   -6.7  0.108 -9.000 -9.000 -999.   85.    16.3  0.03   0.76   1.00    1.76   97.   10.0  284.1    2.0
06 01 01   1 19   -6.5  0.105 -9.000 -9.000 -999.   81.    15.7  0.02   0.76   1.00    1.76   44.   10.0  284.1    2.0
06 01 01   1 20  -17.2  0.177 -9.000 -9.000 -999.  178.    34.3  0.02   0.76   1.00    2.86  317.   10.0  284.1    2.0
06 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.76   1.00    0.00    0.   10.0  284.1    2.0
06 01 01   1 22  -11.9  0.144 -9.000 -9.000 -999.  131.    22.7  0.02   0.76   1.00    2.36   32.   10.0  284.1    2.0
06 01 01   1 23  -18.8  0.192 -9.000 -9.000 -999.  202.    40.6  0.04   0.76   1.00    2.86   20.   10.0  284.1    2.0
06 01 01   1 24  -17.2  0.177 -9.000 -9.000 -999.  178.    34.3  0.02   0.76   1.00    2.86   50.   10.0  285.1    2.0


First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT REV3                    ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** NOX 1-HOUR - NO MITIGATION 2020 400,000 T/Y THROUGHPUT          ***       19:50:21
                                                                                                   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                *** THE SUMMARY OF MAXIMUM   1ST-HIGHEST MAX DAILY  1-HR RESULTS AVERAGED OVER   4 YEARS ***


                          ** CONC OF NO2      IN MICROGRAMS/M**3                    **

                                                                                  NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS      25.70149 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS      25.48553 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS      24.11943 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS      21.63199 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS      18.12681 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS      16.29090 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        7TH HIGHEST VALUE IS      15.97519 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS      15.72808 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS      15.14286 AT (  324807.30,  3986830.12,   176.00,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS      13.43087 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT REV3                    ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** NOX 1-HOUR - NO MITIGATION 2020 400,000 T/Y THROUGHPUT          ***       19:50:21
                                                                                                   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                *** THE SUMMARY OF MAXIMUM   8TH-HIGHEST MAX DAILY  1-HR RESULTS AVERAGED OVER   4 YEARS ***


                          ** CONC OF NO2      IN MICROGRAMS/M**3                    **

                                                                                  NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS      11.12965 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS       8.78254 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS       6.65314 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS       6.63052 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS       4.73880 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS       3.60334 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        7TH HIGHEST VALUE IS       3.40951 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS       3.28566 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS       3.13572 AT (  324184.95,  3985748.04,   259.49,   264.00,    0.00)  DC
       10TH HIGHEST VALUE IS       2.89225 AT (  324807.30,  3986830.12,   176.00,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                GP = GRIDPOLR
                DC = DISCCART
                DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT REV3                    ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** NOX 1-HOUR - NO MITIGATION 2020 400,000 T/Y THROUGHPUT          ***       19:50:21
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of          0 Fatal Error Message(s)
A Total of          7 Warning Message(s)
A Total of       7410 Informational Message(s)

A Total of      35088 Hours Were Processed

A Total of       6527 Calm Hours Identified

A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     903       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     904       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
ME W187    5728      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
MX W481   35089         MAIN: Data Remaining After End of Year. Number of Hours=        24
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

- - - -

```
**Approximate Storage Requirements of Model =      3.7 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out

**Detailed Error/Message File:   400000_NOXA_2020_R3.ERR
**File for Summary of Results:   400000_NOXA_2020_R3.SUM
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT REV3                    ***       07/18/19
*** AERMET - VERSION  18081 ***   *** ANNUAL NO2 - NO MITIGATION 2020 400,000 T/Y THROUGHPUT          ***       19:50:54
                                                                                                  PAGE   2
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                          (1=YES; 0=NO)

        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                        *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                          (METERS/SEC)

                                   1.54,   3.09,   5.14,   8.23,  10.80,
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT REV3                    ***       07/18/19
*** AERMET - VERSION  18081 ***   *** ANNUAL NO2 - NO MITIGATION 2020 400,000 T/Y THROUGHPUT          ***       19:50:54
                                                                                                  PAGE   3
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                        *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   ..\..\..\AERMOD\PORTERVILLE_2006-2009.SFC                    Met Version:  18081
  Profile file:   ..\..\..\AERMOD\PORTERVILLE_2006-2009.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    23149              Upper air station no.:    23230
            Name: UNKNOWN                           Name: OAKLAND/WSO_AP
            Year:   2006                        Year:   2006

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 06 01 01   1 01  -24.8  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  101.   10.0  280.1    2.0
 06 01 01   1 02  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  108.   10.0  281.1    2.0
 06 01 01   1 03  -21.4  0.215 -9.000 -9.000 -999.  240.     50.9  0.03   0.76   1.00    3.36  104.   10.0  280.1    2.0
 06 01 01   1 04  -24.7  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 05  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 06  -25.0  0.252 -9.000 -9.000 -999.  303.     69.7  0.03   0.76   1.00    3.86  132.   10.0  281.1    2.0
 06 01 01   1 07  -28.4  0.286 -9.000 -9.000 -999.  366.     89.8  0.03   0.76   1.00    4.36  145.   10.0  281.1    2.0
 06 01 01   1 08  -18.7  0.205 -9.000 -9.000 -999.  225.     46.2  0.02   0.76   0.61    3.36  163.   10.0  280.1    2.0
 06 01 01   1 09   11.0 -9.000 -9.000 -9.000   95. -999. -99999.0  0.03   0.76   0.34    0.00    0.   10.0  282.1    2.0
 06 01 01   1 10   48.2 -9.000 -9.000 -9.000  186. -999. -99999.0  0.03   0.76   0.25    0.00    0.   10.0  284.1    2.0
 06 01 01   1 11   81.6  0.277  0.863  0.005  280.  350.    -23.1  0.04   0.76   0.22    3.36    4.   10.0  284.1    2.0
 06 01 01   1 12   96.6  0.230  0.994  0.005  360.  265.    -11.1  0.02   0.76   0.21    2.86  306.   10.0  284.1    2.0
 06 01 01   1 13  101.2 -9.000 -9.000 -9.000  608. -999. -99999.0  0.03   0.76   0.21    0.00    0.   10.0  284.1    2.0
 06 01 01   1 14   17.7  0.212  0.685  0.005  644.  234.    -47.5  0.03   0.76   0.22    2.86  119.   10.0  284.1    2.0
 06 01 01   1 15   10.3  0.274  0.579  0.005  666.  344.   -176.6  0.03   0.76   0.25    3.86  142.   10.0  284.1    2.0
 06 01 01   1 16    0.1  0.263  0.123  0.005  668.  323.  -8888.0  0.03   0.76   0.35    3.86  104.   10.0  284.1    2.0
 06 01 01   1 17  -11.7  0.144 -9.000 -9.000 -999.  139.     22.8  0.02   0.76   0.62    2.36   41.   10.0  283.1    2.0
 06 01 01   1 18   -6.7  0.108 -9.000 -9.000 -999.   85.     16.3  0.03   0.76   1.00    1.76   97.   10.0  284.1    2.0
 06 01 01   1 19   -6.5  0.105 -9.000 -9.000 -999.   81.     15.7  0.02   0.76   1.00    1.76   44.   10.0  284.1    2.0
```

```
06 01 01   1 20  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86  317.   10.0  284.1    2.0
06 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.76   1.00    0.00    0.   10.0  284.1    2.0
06 01 01   1 22  -11.9  0.144 -9.000 -9.000 -999.  131.     22.7  0.02   0.76   1.00    2.36   32.   10.0  284.1    2.0
06 01 01   1 23  -18.8  0.192 -9.000 -9.000 -999.  202.     40.6  0.04   0.76   1.00    2.86   20.   10.0  284.1    2.0
06 01 01   1 24  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86   50.   10.0  285.1    2.0


First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT REV3                          ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** ANNUAL NO2 - NO MITIGATION 2020 400,000 T/Y THROUGHPUT            ***       19:50:54
                                                                                                   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                         *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   4 YEARS ***


                          ** CONC OF NO2      IN MICROGRAMS/M**3                      **

                                                                                  NETWORK
GROUP ID                  AVERAGE CONC             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       1.02979 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS       0.54677 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS       0.43565 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS       0.33570 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS       0.32157 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS       0.25235 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        7TH HIGHEST VALUE IS       0.24367 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS       0.24337 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS       0.21769 AT (  324807.30,  3986830.12,   176.00,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS       0.21287 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT REV3                          ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** ANNUAL NO2 - NO MITIGATION 2020 400,000 T/Y THROUGHPUT            ***       19:50:54
                                                                                                   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          7 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
```

SO W320	903	PPARM: Input Parameter May Be Out-of-Range for Parameter	VS
SO W320	904	PPARM: Input Parameter May Be Out-of-Range for Parameter	VS
ME W187	928	MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET	
MX W481	35089	MAIN: Data Remaining After End of Year. Number of Hours=	24

```
♀*** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** PM10 Exh 24-hr  - No MItigation 2020 400,000 t/y Throughput        ***       10:11:21
                                                                                                  PAGE   1
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
       1. Stack-tip Downwash.
       2. Model Accounts for ELEVated Terrain Effects.
       3. Use Calms Processing Routine.
       4. Use Missing Data Processing Routine.
       5. No Exponential Decay.

**Other Options Specified:
       ADJ_U*   - Use ADJ_U* option for SBL in AERMET
       CCVR_Sub - Meteorological data includes CCVR substitutions
       TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM10E

**Model Calculates  1 Short Term Average(s) of:  24-HR

**This Run Includes:    398 Source(s);       1 Source Group(s); and      17 Receptor(s)

             with:      5 POINT(s), including
                      0 POINTCAP(s) and      0 POINTHOR(s)
              and:    393 VOLUME source(s)
              and:      0 AREA type source(s)
              and:      0 LINE source(s)
              and:      0 OPENPIT source(s)
              and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
              Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
              Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.9 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   400000_PM1024E_2020_R3.err
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\Porterville_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\Porterville_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** PM10 Exh 24-hr  - No MItigation 2020 400,000 t/y Throughput        ***       10:11:21
                                                                                          PAGE   4
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***


                          ** CONC OF PM10E    IN MICROGRAMS/M**3                    **

                                       DATE                                          NETWORK
GROUP ID                     AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.04411c ON 08022524: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


*** RECEPTOR TYPES:  GC = GRIDCART
                     GP = GRIDPOLR
                     DC = DISCCART
                     DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** PM10 Exh 24-hr  - No MItigation 2020 400,000 t/y Throughput        ***       10:11:21
                                                                                          PAGE   5
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of          0 Fatal Error Message(s)
A Total of          6 Warning Message(s)
A Total of       7410 Informational Message(s)

A Total of      35088 Hours Were Processed

A Total of       6527 Calm Hours Identified

A Total of        883 Missing Hours Identified (  2.52 Percent)


  ******** FATAL ERROR MESSAGES ********
           ***  NONE  ***


  ********   WARNING MESSAGES   ********
SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     903       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     904       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
ME W187    5728       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM_10FD

**Model Calculates  1 Short Term Average(s) of:  24-HR

**This Run Includes:    397 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      3 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      1 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      4.0 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   400000_PM1024FD_2020_R3.ERR
```

**File for Summary of Results: 400000_PM1024FD_2020_R3.SUM

♀ *** AERMOD - VERSION 18081 *** *** DEER CREEK MINE EXPANSION PROJECT *** 07/18/19

*** AERMET - VERSION 18081 *** *** MAX 24HR PM10 FUGITIVE DUST - 2020 400,000 T/Y THROUGHPUT *** 20:09:33

PAGE 2

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 18081 *** *** DEER CREEK MINE EXPANSION PROJECT *** 07/18/19

*** AERMET - VERSION 18081 *** *** MAX 24HR PM10 FUGITIVE DUST - 2020 400,000 T/Y THROUGHPUT *** 20:09:33

PAGE 3

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\PORTERVILLE_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\PORTERVILLE_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT                          ***       07/18/19
*** AERMET - VERSION  18081 ***   *** MAX 24HR  PM10 FUGITIVE DUST -  2020 400,000 T/Y THROUGHPUT        ***       20:09:33
                                                                                                PAGE   4
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***


                          ** CONC OF PM_10FD  IN MICROGRAMS/M**3                    **

                                       DATE                                          NETWORK
GROUP ID                     AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       4.49801c ON 06010524: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


*** RECEPTOR TYPES:  GC = GRIDCART
                     GP = GRIDPOLR
                     DC = DISCCART
                     DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT                          ***       07/18/19
*** AERMET - VERSION  18081 ***   *** MAX 24HR  PM10 FUGITIVE DUST -  2020 400,000 T/Y THROUGHPUT        ***       20:09:33
                                                                                                PAGE   5
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of          0 Fatal Error Message(s)
A Total of          3 Warning Message(s)
A Total of       7410 Informational Message(s)

A Total of      35088 Hours Were Processed

A Total of       6527 Calm Hours Identified

A Total of        883 Missing Hours Identified (  2.52 Percent)


  ******** FATAL ERROR MESSAGES ********
           ***  NONE  ***


  ********   WARNING MESSAGES   ********
SO W320     898       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     899       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
ME W187    5710       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM10E

**Model Calculates ANNUAL Averages Only

**This Run Includes:    398 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      5 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      0 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of ANNUAL Averages by Receptor
       Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.7 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out
```

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\Porterville_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\Porterville_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
 *** AERMET - VERSION  18081 ***   *** PM10 Exh Annual  - No MItigation 2020 400,000 t/y Throughput        ***       09:18:27
                                                                                              PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   4 YEARS ***


                           ** CONC OF PM10E    IN MICROGRAMS/M**3                    **

                                                                                 NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.04185 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS       0.02473 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS       0.02038 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS       0.01617 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS       0.01593 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS       0.01461 AT (  324807.30,  3986830.12,   176.00,   470.00,    0.00)  DC
        7TH HIGHEST VALUE IS       0.01235 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS       0.01195 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS       0.01193 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS       0.01055 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
 *** AERMET - VERSION  18081 ***   *** PM10 Exh Annual  - No MItigation 2020 400,000 t/y Throughput        ***       09:18:27
                                                                                              PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          7 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     903       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     904       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187     928      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
 MX W481   35089        MAIN: Data Remaining After End of Year. Number of Hours=         24
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM_10FD

**Model Calculates ANNUAL Averages Only

**This Run Includes:    397 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      3 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      1 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of ANNUAL Averages by Receptor
       Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.8 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out
```

```
**Detailed Error/Message File:   400000_PM10AFD_2020_R3.err
**File for Summary of Results:   400000_PM10AFD_2020_R3.sum
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** Annual  PM10 Fugitive Dust -  2020 400,000 t/y Throughput          ***       09:30:22
                                                                                    PAGE   2
*** MODELOPTs:    RegDEFAULT  CONC  ELEV  RURAL  ADJ_U*

                        *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                  (1=YES; 0=NO)

        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                     *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                  (METERS/SEC)

                                 1.54,   3.09,   5.14,   8.23,  10.80,
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** Annual  PM10 Fugitive Dust -  2020 400,000 t/y Throughput          ***       09:30:22
                                                                                    PAGE   3
*** MODELOPTs:    RegDEFAULT  CONC  ELEV  RURAL  ADJ_U*

                     *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   ..\..\..\AERMOD\Porterville_2006-2009.SFC                    Met Version:  18081
  Profile file:   ..\..\..\AERMOD\Porterville_2006-2009.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    23149              Upper air station no.:    23230
            Name: UNKNOWN                          Name: OAKLAND/WSO_AP
            Year:   2006                       Year:   2006

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 06 01 01   1 01  -24.8  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  101.   10.0  280.1    2.0
 06 01 01   1 02  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  108.   10.0  281.1    2.0
 06 01 01   1 03  -21.4  0.215 -9.000 -9.000 -999.  240.     50.9  0.03   0.76   1.00    3.36  104.   10.0  280.1    2.0
 06 01 01   1 04  -24.7  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 05  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 06  -25.0  0.252 -9.000 -9.000 -999.  303.     69.7  0.03   0.76   1.00    3.86  132.   10.0  281.1    2.0
 06 01 01   1 07  -28.4  0.286 -9.000 -9.000 -999.  366.     89.8  0.03   0.76   1.00    4.36  145.   10.0  281.1    2.0
 06 01 01   1 08  -18.7  0.205 -9.000 -9.000 -999.  225.     46.2  0.02   0.76   0.61    3.36  163.   10.0  280.1    2.0
 06 01 01   1 09   11.0 -9.000 -9.000 -9.000   95. -999. -99999.0  0.03   0.76   0.34    0.00    0.   10.0  282.1    2.0
 06 01 01   1 10   48.2 -9.000 -9.000 -9.000  186. -999. -99999.0  0.03   0.76   0.25    0.00    0.   10.0  284.1    2.0
 06 01 01   1 11   81.6  0.277  0.863  0.005  280.  350.    -23.1  0.04   0.76   0.22    3.36    4.   10.0  284.1    2.0
 06 01 01   1 12   96.6  0.230  0.994  0.005  360.  265.    -11.1  0.02   0.76   0.21    2.86  306.   10.0  284.1    2.0
 06 01 01   1 13  101.2 -9.000 -9.000 -9.000  608. -999. -99999.0  0.03   0.76   0.21    0.00    0.   10.0  284.1    2.0
 06 01 01   1 14   17.7  0.212  0.685  0.005  644.  234.    -47.5  0.03   0.76   0.22    2.86  119.   10.0  284.1    2.0
 06 01 01   1 15   10.3  0.274  0.579  0.005  666.  344.   -176.6  0.03   0.76   0.25    3.86  142.   10.0  284.1    2.0
 06 01 01   1 16    0.1  0.263  0.123  0.005  668.  323.  -8888.0  0.03   0.76   0.35    3.86  104.   10.0  284.1    2.0
 06 01 01   1 17  -11.7  0.144 -9.000 -9.000 -999.  139.     22.8  0.02   0.76   0.62    2.36   41.   10.0  283.1    2.0
 06 01 01   1 18   -6.7  0.108 -9.000 -9.000 -999.   85.     16.3  0.03   0.76   1.00    1.76   97.   10.0  284.1    2.0
 06 01 01   1 19   -6.5  0.105 -9.000 -9.000 -999.   81.     15.7  0.02   0.76   1.00    1.76   44.   10.0  284.1    2.0
 06 01 01   1 20  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86  317.   10.0  284.1    2.0
 06 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.76   1.00    0.00    0.   10.0  284.1    2.0
 06 01 01   1 22  -11.9  0.144 -9.000 -9.000 -999.  131.     22.7  0.02   0.76   1.00    2.36   32.   10.0  284.1    2.0
 06 01 01   1 23  -18.8  0.192 -9.000 -9.000 -999.  202.     40.6  0.04   0.76   1.00    2.86   20.   10.0  284.1    2.0
 06 01 01   1 24  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86   50.   10.0  285.1    2.0
```

```
 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/19/19
 *** AERMET - VERSION  18081 ***   *** Annual  PM10 Fugitive Dust -  2020 400,000 t/y Throughput          ***       09:30:22
                                                                                                   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   4 YEARS ***


                           ** CONC OF PM_10FD  IN MICROGRAMS/M**3                     **

                                                                                 NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       1.52708 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS       0.78687 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS       0.61020 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS       0.48119 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS       0.45273 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS       0.42881 AT (  324184.95,  3985748.04,   259.49,   264.00,    0.00)  DC
        7TH HIGHEST VALUE IS       0.31393 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS       0.30289 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS       0.30108 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS       0.26401 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/19/19
 *** AERMET - VERSION  18081 ***   *** Annual  PM10 Fugitive Dust -  2020 400,000 t/y Throughput          ***       09:30:22
                                                                                                   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          4 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 SO W320     898       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     899       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187     925      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
 MX W481   35089        MAIN: Data Remaining After End of Year. Number of Hours=         24
```

```
♀*** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** PM2.5 Exh 24-hr  - No MItigation 2020 400,000 t/y Throughput        ***       10:07:58
                                                                                                   PAGE   1
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM2.5E

**Model Calculates  1 Short Term Average(s) of:  24-HR

**This Run Includes:    398 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      5 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      0 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.9 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   400000_PM2524E_2020_R3.err
```

**File for Summary of Results: 400000_PM2524E_2020_R3.sum

♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project REV3 *** 07/19/19

*** AERMET - VERSION 18081 *** *** PM2.5 Exh 24-hr - No MItigation 2020 400,000 t/y Throughput *** 10:07:58

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project REV3 *** 07/19/19

*** AERMET - VERSION 18081 *** *** PM2.5 Exh 24-hr - No MItigation 2020 400,000 t/y Throughput *** 10:07:58

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\Porterville_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\Porterville_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** PM2.5 Exh 24-hr  - No MItigation 2020 400,000 t/y Throughput       ***       10:07:58
                                                                                              PAGE   4
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***


                          ** CONC OF PM2.5E   IN MICROGRAMS/M**3                    **

                                       DATE                                          NETWORK
GROUP ID                     AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.06546c ON 09120124: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


*** RECEPTOR TYPES:  GC = GRIDCART
                     GP = GRIDPOLR
                     DC = DISCCART
                     DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** PM2.5 Exh 24-hr  - No MItigation 2020 400,000 t/y Throughput       ***       10:07:58
                                                                                              PAGE   5
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of          0 Fatal Error Message(s)
A Total of          6 Warning Message(s)
A Total of       7410 Informational Message(s)

A Total of      35088 Hours Were Processed

A Total of       6527 Calm Hours Identified

A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     903       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     904       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
ME W187    5728       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM_10FD

**Model Calculates ANNUAL Averages Only

**This Run Includes:    397 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      3 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      1 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of ANNUAL Averages by Receptor
       Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.8 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out
```

```
**Detailed Error/Message File:   400000_PM25AFD_2020_R3.err
**File for Summary of Results:   400000_PM25AFD_2020_R3.sum
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** Annual  PM2.5 Fugitive Dust -  2020 400,000 t/y Throughput        ***       09:50:10
                                                                                                PAGE   2
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                      (1=YES; 0=NO)

        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                     *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                      (METERS/SEC)

                                 1.54,   3.09,   5.14,   8.23,  10.80,
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** Annual  PM2.5 Fugitive Dust -  2020 400,000 t/y Throughput        ***       09:50:10
                                                                                                PAGE   3
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   ..\..\..\AERMOD\Porterville_2006-2009.SFC                    Met Version:  18081
  Profile file:   ..\..\..\AERMOD\Porterville_2006-2009.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    23149                Upper air station no.:    23230
            Name: UNKNOWN                              Name: OAKLAND/WSO_AP
            Year:   2006                          Year:   2006

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 06 01 01   1 01  -24.8  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  101.   10.0  280.1    2.0
 06 01 01   1 02  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  108.   10.0  281.1    2.0
 06 01 01   1 03  -21.4  0.215 -9.000 -9.000 -999.  240.     50.9  0.03   0.76   1.00    3.36  104.   10.0  280.1    2.0
 06 01 01   1 04  -24.7  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 05  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 06  -25.0  0.252 -9.000 -9.000 -999.  303.     69.7  0.03   0.76   1.00    3.86  132.   10.0  281.1    2.0
 06 01 01   1 07  -28.4  0.286 -9.000 -9.000 -999.  366.     89.8  0.03   0.76   1.00    4.36  145.   10.0  281.1    2.0
 06 01 01   1 08  -18.7  0.205 -9.000 -9.000 -999.  225.     46.2  0.02   0.76   0.61    3.36  163.   10.0  280.1    2.0
 06 01 01   1 09   11.0 -9.000 -9.000 -9.000   95. -999. -99999.0  0.03   0.76   0.34    0.00    0.   10.0  282.1    2.0
 06 01 01   1 10   48.2 -9.000 -9.000 -9.000  186. -999. -99999.0  0.03   0.76   0.25    0.00    0.   10.0  284.1    2.0
 06 01 01   1 11   81.6  0.277  0.863  0.005  280.  350.    -23.1  0.04   0.76   0.22    3.36    4.   10.0  284.1    2.0
 06 01 01   1 12   96.6  0.230  0.994  0.005  360.  265.    -11.1  0.02   0.76   0.21    2.86  306.   10.0  284.1    2.0
 06 01 01   1 13  101.2 -9.000 -9.000 -9.000  608. -999. -99999.0  0.03   0.76   0.21    0.00    0.   10.0  284.1    2.0
 06 01 01   1 14   17.7  0.212  0.685  0.005  644.  234.    -47.5  0.03   0.76   0.22    2.86  119.   10.0  284.1    2.0
 06 01 01   1 15   10.3  0.274  0.579  0.005  666.  344.   -176.6  0.03   0.76   0.25    3.86  142.   10.0  284.1    2.0
 06 01 01   1 16    0.1  0.263  0.123  0.005  668.  323.  -8888.0  0.03   0.76   0.35    3.86  104.   10.0  284.1    2.0
 06 01 01   1 17  -11.7  0.144 -9.000 -9.000 -999.  139.     22.8  0.02   0.76   0.62    2.36   41.   10.0  283.1    2.0
 06 01 01   1 18   -6.7  0.108 -9.000 -9.000 -999.   85.     16.3  0.03   0.76   1.00    1.76   97.   10.0  284.1    2.0
 06 01 01   1 19   -6.5  0.105 -9.000 -9.000 -999.   81.     15.7  0.02   0.76   1.00    1.76   44.   10.0  284.1    2.0
 06 01 01   1 20  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86  317.   10.0  284.1    2.0
 06 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.76   1.00    0.00    0.   10.0  284.1    2.0
 06 01 01   1 22  -11.9  0.144 -9.000 -9.000 -999.  131.     22.7  0.02   0.76   1.00    2.36   32.   10.0  284.1    2.0
 06 01 01   1 23  -18.8  0.192 -9.000 -9.000 -999.  202.     40.6  0.04   0.76   1.00    2.86   20.   10.0  284.1    2.0
 06 01 01   1 24  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86   50.   10.0  285.1    2.0
```

```
 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/19/19
 *** AERMET - VERSION  18081 ***   *** Annual  PM2.5 Fugitive Dust -  2020 400,000 t/y Throughput          ***       09:50:10
                                                                                                   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   4 YEARS ***


                           ** CONC OF PM_10FD  IN MICROGRAMS/M**3                      **

                                                                                  NETWORK
GROUP ID                    AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.22973 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS       0.12387 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS       0.09715 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS       0.07400 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS       0.07257 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS       0.05515 AT (  324184.95,  3985748.04,   259.49,   264.00,    0.00)  DC
        7TH HIGHEST VALUE IS       0.05072 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS       0.04895 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS       0.04866 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS       0.04279 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/19/19
 *** AERMET - VERSION  18081 ***   *** Annual  PM2.5 Fugitive Dust -  2020 400,000 t/y Throughput          ***       09:50:10
                                                                                                   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          4 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 SO W320     898       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     899       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187     925      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
 MX W481   35089        MAIN: Data Remaining After End of Year. Number of Hours=         24
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM2.5E

**Model Calculates ANNUAL Averages Only

**This Run Includes:    398 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      5 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      0 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of ANNUAL Averages by Receptor
       Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.7 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out
```

```
**Detailed Error/Message File:   400000_PM25AE_2020_R3.err
**File for Summary of Results:   400000_PM25AE_2020_R3.sum
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** PM2.5 Exh Annual  - No MItigation 2020 400,000 t/y Throughput       ***       09:35:35
                                                                                                   PAGE   2
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                      (1=YES; 0=NO)

        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                     *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                  (METERS/SEC)

                                 1.54,   3.09,   5.14,   8.23,  10.80,
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
*** AERMET - VERSION  18081 ***   *** PM2.5 Exh Annual  - No MItigation 2020 400,000 t/y Throughput       ***       09:35:35
                                                                                                   PAGE   3
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                       *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   ..\..\..\AERMOD\Porterville_2006-2009.SFC                    Met Version:  18081
  Profile file:   ..\..\..\AERMOD\Porterville_2006-2009.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    23149              Upper air station no.:    23230
            Name: UNKNOWN                           Name: OAKLAND/WSO_AP
            Year:   2006                        Year:   2006

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 06 01 01   1 01  -24.8  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  101.   10.0  280.1    2.0
 06 01 01   1 02  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  108.   10.0  281.1    2.0
 06 01 01   1 03  -21.4  0.215 -9.000 -9.000 -999.  240.     50.9  0.03   0.76   1.00    3.36  104.   10.0  280.1    2.0
 06 01 01   1 04  -24.7  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 05  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 06  -25.0  0.252 -9.000 -9.000 -999.  303.     69.7  0.03   0.76   1.00    3.86  132.   10.0  281.1    2.0
 06 01 01   1 07  -28.4  0.286 -9.000 -9.000 -999.  366.     89.8  0.03   0.76   1.00    4.36  145.   10.0  281.1    2.0
 06 01 01   1 08  -18.7  0.205 -9.000 -9.000 -999.  225.     46.2  0.02   0.76   0.61    3.36  163.   10.0  280.1    2.0
 06 01 01   1 09   11.0 -9.000 -9.000 -9.000   95. -999. -99999.0  0.03   0.76   0.34    0.00    0.   10.0  282.1    2.0
 06 01 01   1 10   48.2 -9.000 -9.000 -9.000  186. -999. -99999.0  0.03   0.76   0.25    0.00    0.   10.0  284.1    2.0
 06 01 01   1 11   81.6  0.277  0.863  0.005  280.  350.    -23.1  0.04   0.76   0.22    3.36    4.   10.0  284.1    2.0
 06 01 01   1 12   96.6  0.230  0.994  0.005  360.  265.    -11.1  0.02   0.76   0.21    2.86  306.   10.0  284.1    2.0
 06 01 01   1 13  101.2 -9.000 -9.000 -9.000  608. -999. -99999.0  0.03   0.76   0.21    0.00    0.   10.0  284.1    2.0
 06 01 01   1 14   17.7  0.212  0.685  0.005  644.  234.    -47.5  0.03   0.76   0.22    2.86  119.   10.0  284.1    2.0
 06 01 01   1 15   10.3  0.274  0.579  0.005  666.  344.   -176.6  0.03   0.76   0.25    3.86  142.   10.0  284.1    2.0
 06 01 01   1 16    0.1  0.263  0.123  0.005  668.  323.  -8888.0  0.03   0.76   0.35    3.86  104.   10.0  284.1    2.0
 06 01 01   1 17  -11.7  0.144 -9.000 -9.000 -999.  139.     22.8  0.02   0.76   0.62    2.36   41.   10.0  283.1    2.0
 06 01 01   1 18   -6.7  0.108 -9.000 -9.000 -999.   85.     16.3  0.03   0.76   1.00    1.76   97.   10.0  284.1    2.0
 06 01 01   1 19   -6.5  0.105 -9.000 -9.000 -999.   81.     15.7  0.02   0.76   1.00    1.76   44.   10.0  284.1    2.0
 06 01 01   1 20  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86  317.   10.0  284.1    2.0
 06 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.76   1.00    0.00    0.   10.0  284.1    2.0
 06 01 01   1 22  -11.9  0.144 -9.000 -9.000 -999.  131.     22.7  0.02   0.76   1.00    2.36   32.   10.0  284.1    2.0
 06 01 01   1 23  -18.8  0.192 -9.000 -9.000 -999.  202.     40.6  0.04   0.76   1.00    2.86   20.   10.0  284.1    2.0
 06 01 01   1 24  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86   50.   10.0  285.1    2.0
```

```
 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
 *** AERMET - VERSION  18081 ***   *** PM2.5 Exh Annual  - No MItigation 2020 400,000 t/y Throughput       ***       09:35:35
                                                                                              PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   4 YEARS ***


                           ** CONC OF PM2.5E   IN MICROGRAMS/M**3                    **

                                                                                 NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.01427 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS       0.00825 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS       0.00662 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS       0.00521 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS       0.00508 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS       0.00467 AT (  324184.95,  3985748.04,   259.49,   264.00,    0.00)  DC
        7TH HIGHEST VALUE IS       0.00369 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS       0.00356 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS       0.00355 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS       0.00311 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
 *** AERMET - VERSION  18081 ***   *** PM2.5 Exh Annual  - No MItigation 2020 400,000 t/y Throughput       ***       09:35:35
                                                                                              PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          7 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     903       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     904       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187     928      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
 MX W481   35089        MAIN: Data Remaining After End of Year. Number of Hours=         24
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM_10FD

**Model Calculates  1 Short Term Average(s) of:  24-HR

**This Run Includes:    397 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      3 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      1 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                          m for Missing Hours
                                          b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      4.0 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   400000_PM2524FE_2020_R3.ERR
```

**File for Summary of Results: 400000_PM2524FE_2020_R3.SUM

♀ *** AERMOD - VERSION 18081 *** *** DEER CREEK MINE EXPANSION PROJECT *** 07/18/19

*** AERMET - VERSION 18081 *** *** MAX 24HR PM2.5 FUGITIVE DUST - 2020 400,000 T/Y THROUGHPUT *** 20:07:13

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 18081 *** *** DEER CREEK MINE EXPANSION PROJECT *** 07/18/19

*** AERMET - VERSION 18081 *** *** MAX 24HR PM2.5 FUGITIVE DUST - 2020 400,000 T/Y THROUGHPUT *** 20:07:13

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*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\PORTERVILLE_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\PORTERVILLE_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT                          ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** MAX 24HR  PM2.5 FUGITIVE DUST -  2020 400,000 T/Y THROUGHPUT        ***       20:07:13
                                                                                          PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***


                          ** CONC OF PM_10FD  IN MICROGRAMS/M**3                    **

                                       DATE                                          NETWORK
GROUP ID                     AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.81582c ON 08022524: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** DEER CREEK MINE EXPANSION PROJECT                          ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** MAX 24HR  PM2.5 FUGITIVE DUST -  2020 400,000 T/Y THROUGHPUT        ***       20:07:13
                                                                                          PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          3 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 SO W320     898       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     899       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187    5710       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  DPM

**Model Calculates  1 Short Term Average(s) of:   1-HR
   and Calculates PERIOD Averages

**This Run Includes:    550 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      5 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:   545 VOLUME source(s)
             and:     0 AREA type source(s)
             and:     0 LINE source(s)
             and:     0 OPENPIT source(s)
             and:     0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of PERIOD Averages by Receptor
       Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.7 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out
```

**Detailed Error/Message File: 400000_DPM_2020_R3.err
**File for Summary of Results: 400000_DPM_2020_R3.sum
♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project REV3 *** 07/18/19
*** AERMET - VERSION 18081 *** *** Annual DPM - No MItigation 2020 400,000 t/y Throughput *** 18:19:39
PAGE 2
*** MODELOPTs: RegDEFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project REV3 *** 07/18/19
*** AERMET - VERSION 18081 *** *** Annual DPM - No MItigation 2020 400,000 t/y Throughput *** 18:19:39
PAGE 3
*** MODELOPTs: RegDEFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\Porterville_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\Porterville_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** Annual DPM - No MItigation 2020 400,000 t/y Throughput          ***       18:19:39
                                                                                          PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                *** THE SUMMARY OF MAXIMUM PERIOD ( 35088 HRS) RESULTS ***


                            ** CONC OF DPM      IN MICROGRAMS/M**3                    **

                                                                                  NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.01836 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS       0.00821 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS       0.00658 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS       0.00515 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS       0.00506 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS       0.00457 AT (  324184.95,  3985748.04,   259.49,   264.00,    0.00)  DC
        7TH HIGHEST VALUE IS       0.00371 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS       0.00358 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS       0.00357 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS       0.00312 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** Annual DPM - No MItigation 2020 400,000 t/y Throughput          ***       18:19:39
                                                                                          PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                            ** CONC OF DPM      IN MICROGRAMS/M**3                    **

                                        DATE                                      NETWORK
GROUP ID                  AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.24541  ON 06020220: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/18/19
 *** AERMET - VERSION  18081 ***   *** Annual DPM - No MItigation 2020 400,000 t/y Throughput          ***       18:19:39
                                                                                          PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          6 Warning Message(s)
 A Total of       7410 Informational Message(s)
```

A Total of 35088 Hours Were Processed

A Total of 6527 Calm Hours Identified

A Total of 883 Missing Hours Identified (2.52 Percent)

```
******** FATAL ERROR MESSAGES ********
         ***  NONE  ***


********   WARNING MESSAGES   ********
SO W320    673      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
SO W320    674      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
SO W320   1072      PPARM: Input Parameter May Be Out-of-Range for Parameter         VS
SO W320   1073      PPARM: Input Parameter May Be Out-of-Range for Parameter         VS
SO W320   1074      PPARM: Input Parameter May Be Out-of-Range for Parameter         VS
ME W187   1252      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

*HARP - HRACalc v19044 7/18/2019 7:27:36 PM - Cancer Risk - Input File: C:\temp\Deer Creek\HARP2_R3\DEER CREEK 400K\hra\deerCreek400HRAInput.hr

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_F	MMILK_RI	WATER_RI	FISH_RISK	CROP_RISI	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_I	EGG_RISK	1ST_DRIVE	2ND_DRIVI
1	ALL		324185	3985748	0.00457	9901	DieselExhF	4.51E-06	70YrCance	*	4.51E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
2	ALL		323704.1	3986801	0.01836	9901	DieselExhF	1.81E-05	70YrCance	*	1.81E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
3	ALL		324807.3	3986830	0.0028	9901	DieselExhF	2.76E-06	70YrCance	*	2.76E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
4	ALL		323244.8	3985681	0.00113	9901	DieselExhF	1.11E-06	70YrCance	*	1.11E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
5	ALL		323051.1	3985817	0.00141	9901	DieselExhF	1.39E-06	70YrCance	*	1.39E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
6	ALL		323057.1	3986554	0.00821	9901	DieselExhF	8.09E-06	70YrCance	*	8.09E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
7	ALL		322908	3986532	0.00658	9901	DieselExhF	6.49E-06	70YrCance	*	6.49E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
8	ALL		322915.8	3986351	0.00515	9901	DieselExhF	5.08E-06	70YrCance	*	5.08E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
9	ALL		321721.4	3986690	0.00231	9901	DieselExhF	2.28E-06	70YrCance	*	2.28E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
10	ALL		321528.8	3986641	0.00195	9901	DieselExhF	1.92E-06	70YrCance	*	1.92E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
11	ALL		321316.7	3986644	0.00169	9901	DieselExhF	1.67E-06	70YrCance	*	1.67E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
12	ALL		322083.9	3986708	0.00308	9901	DieselExhF	3.04E-06	70YrCance	*	3.04E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
13	ALL		322236.3	3986734	0.00358	9901	DieselExhF	3.53E-06	70YrCance	*	3.53E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
14	ALL		322273.6	3986734	0.00371	9901	DieselExhF	3.66E-06	70YrCance	*	3.66E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
15	ALL		322091.7	3986730	0.00312	9901	DieselExhF	3.08E-06	70YrCance	*	3.08E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
16	ALL		322230.2	3986753	0.00357	9901	DieselExhF	3.52E-06	70YrCance	*	3.52E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
17	ALL		322698.7	3986534	0.00506	9901	DieselExhF	4.99E-06	70YrCance	*	4.99E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	

ER

Deer Creek Mine Expansion - Tulare County **2025** **Project Development @ 700,000 tons/year**

Summary of Daily Emissions **ONSITE ONLY**

Year: **2025**
Pollutant: **CO** Mitigated

Source	**Annual Total tons/year**
Drilling amd Blasting	11.11
Offeoad Equipment	3.52
Water Trucks	0.08
Work Trucks -	0.08
OnRoad Onsite Haul Trucks -	0.84
Offroad Haul Trucks	1.68
Employee Commute	0.00
Unpaved Road Dust (fugitive dust)	0.00
Dust (loading, wind, storage piles, unpaved roads)	0.00
Permitted Sources	0.00
Total Project Emissions	**17.29**

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year
AERMOD Emission Sources

Year: 2025
Pollutant: CO

Source ID	Source Component	Annual Average Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Type
EOnonHaul	Onroad, Onsite Haul Trucks, Exhaust	1.43E-03	Line-Volume	4.584E-03	Line Volune
	Water Trucks, Exhaust	6.88E-04		2.179E-03	
	Work Trucks.Exhaust	2.34E-04		7.486E-04	
	Total	**2.35E-03**		**7.511E-03**	
EOffHaul	Offroad Haul Trucks,Exhaust	5.141E-02	Line Volume	1.645E-01	Line Volume
	Water Trucks.Exhaust	6.880E-04		2.932E-03	
	Work Trucks,Exhaust	2.339E-04		7.486E-04	
	Total	**5.233E-02**		**1.682E-01**	
Iscale	Onroad, Onsite Haul Trucks, Idle (Scale @ Entrane/Scale@ Exit	**2.511E-02**	Point	**8.035E-02**	Point
Imaint	Maintenance Area Work Truck,Idle	1.598E-03	Point	5.114E-03	Point
	Maintenance Area Water Truck, Idle	1.614E-03		4.303E-03	
	Total	**3.212E-03**		**9.417E-03**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	1.255E-02	Point	4.017E-02	Point
	Onsite Equipment, Operations	8.374E-02		2.680E-01	
	Total	**9.630E-02**		**3.082E-01**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	1.350E-02	Point	4.319E-02	Point
	Excavation Area, Work Truck, Idle	1.598E-03		5.114E-03	
	Onsite Equipment, Operations	8.057E-02		2.578E-01	
	Blasting	5.188E-01		0.000E+00	
	Total	**6.145E-01**		**3.061E-01**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**1.350E-02**	Point	**4.319E-02**	Point

Deer Creek Mine Expansion - Tulare County **2025** **Project Development @ 700,000 tons/year**

Onroad Onsite Average Daily Haul Truck Emissions

Year: **2025**
Pollutant: **CO**

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	***124***	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	1.426	g/mi in Tulare County for 2025 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**123.8**	grams/day
Daily Exhaust Emissions	**0.27**	pounds/day
Annual Exhaust Emissions	**1.432E-03**	grams/sec averaged over all hours of the year

Maximum Daily Onsite Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emi **1.2**

Maximum Daily Emissions	148.51	grams/day
Maximum Daily Emissions	0.33	pounds/day
Maximum Daily Emissio	**########**	**grams/sec**

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	124	trucks/day
EMCAC2017 Idling Emission Factor	34.990	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**3254.06**	g/day
Daily Idling Emissions	**7.17**	pounds/day
Annual Idling Emissions	**3.766E-02**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Maximum Daily Onsite Idling Emissions

Maximum Daily Emissions	3904.87	grams/day
Maximum DailyEmissions	8.60	grams/day
Maximum Daily Emissio	**########**	**grams/sec**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**1.432E-03**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**1.255E-02**	**grams/sec**
Material Loading	**1.255E-02**	**grams/sec**
Weight Scale @ Exit	**1.255E-02**	**grams/sec**

Emission Total	**7.44**	**pounds/day**
	0.837	**tons/year**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**4.584E-03**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**4.017E-02**	**grams/sec**
Material Loading	**4.017E-02**	**grams/sec**
Weight Scale @ Exit	**4.017E-02**	**grams/sec**

Deer Creek Mine Expansion - Tulare County **2025** **Project Development @ 700,000 tons/year**

Offroad Haul Truck Daily Average Daily Emissions

Year: **2025**
Pollutant: **CO** (Unmitigated)

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year	
Number of Trucks	2	trucks	
Average Truck Speed	5	mph	
Increased Hours of Operation	***6.9***	hours/day	
Trip Distance	830	meters or	0.52 miles
Travel Time	0.103	hrs/trip	
Daily Trips	67	trips/day/truck	
	134	trips/day for 2 trucks	
CalEEMod Exhaust Emission Factor	2.20	g/hp-hr (Tier 4)	
Equipment Size	385.00	hp	
Load Factor	0.38		
Work Day	9	hours/day	

Daily Average Exhaust Emissions	4441.67	grams/day
Daily Average Exhaust Emissions	9.78	pounds/day
Annual Average Exhaust Emission	5.141E-02	grams/sec averaged over the entire year

Average Daily Osite Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	134	events
EMCAC2017 Idling Emission Factor	34.856	g/hr in Tulare County for 2025
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	2332.25	grams/day
Daily Average Idling Emissions	5.14	pounds/day
Annual Average Idling Emissions	2.699E-02	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	5.141E-02	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	1.350E-02	grams/sec
Offload area to crusher	1.350E-02	grams/sec

Emission Total	**14.92**	**pounds/day**
	1.679	**tons/year**

Offroad Haul Truck Maximum Daily Emissions

Maximum Daily Onsite Exhaust Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emissions **1.2**

Increased hours of Operation 8.28 hours/day

Maximum Daily Exhaust Emissions	**5330.00**	**grams/day**
Maximum Daily Exhaust Emissions	**11.74**	**pounds/day**
Maximum Daily Exhaust Emissions	**########**	**grams/sec**

Maximum Daily Onsite Idling Emissions

Maximum Daily Idling Emissions	**2798.70**	**grams/day**
Maximum Daily Idling Emissions	**6.16**	**pounds/day**
Maximum Daily Idling Emissions	**########**	**grams/sec**

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	########	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	########	grams/sec
Offload area to crusher	########	grams/sec

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	Comments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.9	0.88	197	422	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	7.9	2.80	224	944	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	7.9	7.88	1,772	3,797	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.9	0.72	133	318	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.4	0.36	67	159	Gasoline 9,500 watt continuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	7.9	2.80	224	944	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	7.9	7.88	1,772	3,797	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	7.9	7.88	1,772	3,797	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	7.9	2.80	224	944	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	7.9	7.88	1,772	3,797	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	7.9	7.88	1,772	3,797	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	2.6	2.16	399	954	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	7.9	7.88	1,772	3,797	
11	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	7.9	7.88	1,772	3,797	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	3.5	0.39	10	110	Limited Use
				4572.1			21,543					17,424	38,967	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	700,000
Increase Fraction	0.875

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	CO g/bhp-hr	Load Factor	Increased Hours/Year	HP x CO Factor	Weighted Avg CO/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	4	2.6	0.44	197	780	0.03	67,568		0.05
2	HITACHI	EX700H Excavator	1991	450	4	2.2	0.38	224	990	0.03	84,269		0.06
3	CAT	CAT 980G Loader	2001	300	4	2.2	0.36	1,772	660	0.22	420,998		0.29
4	GENIE	S60 4X2 BOOM LIFT	1999	48	4	4.1	0.31	133	197	0.03	8,120		0.01
5	BOBCAT	250 WELDER	2008	12.5	4	4.1	0.45	67	51	0.02	1,535		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	4	0	0.38	1,772	0	0.00	0		0.00
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	4	2.2	0.38	224	999	0.03	85,018		0.06
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	4	3.7	0.37	1,772	247	0.38	162,037		0.19
9	GENIE	10,000 LB LIFT	2007	82	4	3.7	0.2	1,772	303	0.38	107,517		0.12
10	KOMATSU	ROCK TRUCK	2010	385	4	0	0.38	1,772	0	0.00	0		0.00
11	TEREX	300LC-2 EXCAVATOR	2007	197	4	2.2	0.38	224	433	0.03	36,891		0.03
12	CAT	980H WHEEL LOADER	2007	355	4	2.2	0.36	1,772	781	0.22	498,180		0.34
13	CAT	980M WHEEL LOADER	2015	378	4	2.2	0.36	1,772	832	0.22	530,457		0.37
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	2.6	0.38	399	455	0.06	69,038		0.06
15	BOBCAT	SKID STEER S570	2017	66.8	4	3.7	0.37	1,772	247	0.38	162,037		0.19
16	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	2.6	0.5	1,772	1,084	0.26	960,533		0.78
17	GROVE	RT74 CRANE	1988	200	4	2.2	0.29	0	440	0.00	0		0.00
				4272.1		**42.5**		**17,415**	**8,500**	**2.29**	**3,194,196**		**2.55**
Fleet Average for ARB Offroad Fleet Reg Compliance									1.99		**Trucks**		

	Annual CO Emissions (grams/year)	Annual CO Emissions (pounds/year)	Daily CO Emissions (pounds/day)	Annual Average CO Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	1,628,000	3585.90	15.94	8.374E-02
Equipment Operating at the haul truck location (highliighted in blue)	1,566,196	3449.77	15.33	8.057E-02
Total (based on increased number of project hours)	3,194,196	7035.67	31.27	1.643E-01
		3.518	**tons/year**	

Factor to Convert Annual Daily Average to Maxximum DailyEmissons	1.2	
Hours of Operation	9	hours/day

	Maximum Daily CO Emissions (pounds/day)	Maximum Daily CO Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	19.12	2.680E-01
Equipment Operating at the haul truck location (highliighted in blue)	18.40	2.578E-01
Total (based on increased number of project hours)	37.52	5.258E-01

Deer Creek Mine Expansion - Tulare County

2025 Project Development @ 700,000 tons/year

Year: **2025**
Pollutant: **CO**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	7	2	1	2	7	14.0	140.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.

Daily Operations 9 hours

Factor to Convert Annual Average Emissions to Maximum Daily Emissic **1.2**

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 1.1827 g/mi in Tulare County for 2025 (average from 5 to 15 mph)

Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)

Daily Average Emissions	165.58	grams/day
Daily Average Emissions	0.36	pounds/day
Annual Average Emissions	1.916E-03	grams/sec

Daily Maximum Onsite Exhaust Emissions

Maximum Daily Exhaust Emissions	198.7	grams/day
Maximum Daily Exhaust Emissions	0.438	pounds/day
Maximum Daily Exhaust Emissions	5.111E-03	grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)

Emission Factor g/mile T7 Construction	34.8557	g/hr in Tulare County for 2025	
Daily Average Emissions	139.423	grams/day	
DailyAverage Emissions	0.307	pounds/day	
Annual Average Emissions	1.614E-03	grams/sec	averaged over all hours of the year

Average Daily Onsite Idle Emissions

Maximum Daily Idling Emissions	167.31	grams/day
Maximum Daily Idling Emissions	0.37	pounds/day
Maximum Daily Idling Emissions	4.303E-03	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	6.880E-04	grams/sec
Travel emissions along the Onroad onsite haul truck route	9.256E-04	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions :	1.614E-03	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad truck route and 1 truck covers the onroad haul truck toure

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Exhaust Emissions Allocated along each route

Travel emissions along the offroad haul truck route	2.179E-03	grams/sec
Travel emissions along the Onroad onsite haul truck rou	2.932E-03	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions :	4.303E-03	grams/sec

Emission Total	**0.672**	**pounds/day**
	0.0756	**tons/year**

Deer Creek Mine Expansion - Tulare County

2025 **Project Development @ 700,000 tons/year**

Year:	**2025**
Pollutant:	**CO**

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	142		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	***1,500,000***	142	blasts/yr
Increased Blasts from Project/Yr		66	

Blasting Emission Factors with ANFO	**CO (lbs/ton)**
	67

Average Daily Emission Calculations

	CO Emissions (lbs/year)	CO Emissions (tons/Yr)	CO Emissions (pounds/day)	Annual Average CO Emissions (grams/sec)	Maximum Daily Emissions	
Net Increase from Project	22216	**11.11**	98.74	5.188E-01	0	no change from the base case on a daily basis

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explosives)
5 tons of ANFO/blast

Emission Allocation

All blasting emissions will be represented as a point source at the excavation area.

Deer Creek Mine Expansion - Tulare County

2025 Project Development @ 700,000 tons/year

Average Daily Onsite Emission Estimates for Work Vehicles

Year: **2025**
Pollutant: **CO**

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***2.8***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Factor to Convert Annual Average Daily Emissions to Maximum Daily Emissio 1.2

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	11.2	miles/day
EMFAC2017 Exhaust Emission Factor	2.424	g/mile for Tulare County in 2025
Averge Daily Exhaust Emissions	27.15	g/day
Averge Daily Exhaust Emissions	0.060	pounds/day
Annual Average Exhaust Emissions	3.142E-04	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	26.30	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	184.10	grams/day
Average Daily Idling Emissions	0.406	pounds/day
Annual Average Idling Emissoins	2.131E-03	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT1

Maximum Daily Exhaust Emissions	32.581	grams/day
Maximum Daily Exhaust Emissions	0.072	pounds/day
Maximum Daily Exhaust Emissions	1.006E-03	grams/sec
Maximum Daily Idling Emissions	220.920	grams/day
Maximum Daily Idling Emissions	0.487	pounds/day
Maximum Daily Idling Emissions	6.819E-03	grams/sec

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	5.6	miles/day
EMFAC2017 Exhaust Emission Factor	2.371	g/mile for Tulare County in 2025
Averge Daily Exhaust Emissions	13.28	g/day
Averge Daily Exhaust Emissions	0.029	pounds/day
Annual Average Exhaust Emissions	1.536E-04	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	26.30	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	92.05	grams/day
Average Daily Idling Emissions	0.203	pounds/day
Annual Average Idling Emissoins	1.065E-03	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT2

Maximum Daily Exhaust Emissions	15.930	grams/day
Maximum Daily Exhaust Emissions	0.0351	pounds/day
Maximum Daily Exhaust Emissions	4.917E-04	grams/sec
Maximum Daily Idling Emissions	110.460	grams/day
Maximum Daily Idling Emissions	0.2433	pounds/day
Maximum Daily Idling Emissions	3.409E-03	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	2.339E-04	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	2.339E-04	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area and	1.598E-03	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	1.598E-03	grams/sec

Emission Total	**0.697**	**pounds/day**
	0.078	**tons/year**

Emission Allocation

Exhaust Emissions
Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Maximum Daily Exhaust Emissons along onroad-offroad haul truck route:	7.486E-04	grams/sec
Maximum Daily Exhaust Emissons along offroad haul truck route:	7.486E-04	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area anc	5.114E-03	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	5.114E-03	grams/sec

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: TULARE
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	CO_RUNEX
TULARE	2025	T7 tractor	Aggregated	5	DSL	2.20
TULARE	2025	T7 tractor	Aggregated	10	DSL	1.35
TULARE	2025	T7 tractor	Aggregated	15	DSL	0.73
TULARE	2025	T7 tractor	Aggregated	20	DSL	0.49
TULARE	2025	T7 tractor	Aggregated	25	DSL	0.37

Average Emission Factors (g/mile) 5 mph to 15 mph

	CO_RUNEX
T7 tractor	1.4257

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	CO IDLEX emission_rate
2025	Annual	Tulare (SJV)	T7 tractor	Dsl	CO	34.990

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	CO_RUNEX
TULARE	2025	T7 single construction	Aggregated	5	DSL	1.803
TULARE	2025	T7 single construction	Aggregated	10	DSL	1.125
TULARE	2025	T7 single construction	Aggregated	15	DSL	0.621

Average (5-15mph)

CO_RUNEX
1.183

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	CO_IDLEX
2025	Annual	Tulare (SJV)	T7 Single Construction	Dsl	IDLEX	34.856

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	CO_RUNEX
TULARE	2025	LHD1	Aggregated	5	DSL	3.332
TULARE	2025	LHD1	Aggregated	10	DSL	2.425
TULARE	2025	LHD1	Aggregated	15	DSL	1.515
					Average 5-15mpl	2.424
TULARE	2025	LHD2	Aggregated	5	DSL	3.278
TULARE	2025	LHD2	Aggregated	10	DSL	2.400
TULARE	2025	LHD2	Aggregated	15	DSL	1.434
					Average 5-15mpl	2.371

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	CO_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	26.30
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	26.30

Deer Creek Mine Expansion - Tulare Cou **2025** **Project Development @ 700,000 tons/year**

Summary of Daily Emissions **ONSITE ONLY**

Year: **2025**
Pollutant: **NOx**

Source	**Annual Total tons/year**
Drilling amd Blasting	2.818
Offeoad Equipment	1.065
Water Trucks	0.315
Work Trucks -	0.176
OnRoad Onsite Haul Trucks -	0.874
Offroad Haul Trucks	0.600
Employee Commute	0.000
Unpaved Road Dust (fugitive dust)	0.000
Dust (loading, wind, storage piles, unpaved roads)	0.000
Permitted Sources	0.000
Total Project Emissions	**5.849**

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year
AERMOD Emission Sources

Year: 2025
Pollutant: NOx

Source ID	Source Component	Annual Average Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Type
EOnOnHaul	Onroad, Onsite Haul Trucks, Exhaust	1.07E-02	Line-Volume	3.429E-02	Line Volune
	Water Trucks, Exhaust	5.60E-04		1.522E-02	
	Work Trucks.Exhaust	1.96E-04		6.261E-04	
	Total	**1.15E-02**		**5.014E-02**	
EOffHaul	Offroad Haul Trucks,Exhaust	6.076E-03	Line Volume	1.944E-02	Line Volume
	Water Trucks.Exhaust	5.598E-04		2.048E-02	
	Work Trucks,Exhaust	1.956E-04		6.261E-04	
	Total	**6.831E-03**		**4.055E-02**	
Iscale	Onroad, Onsite Haul Trucks, Idle (Scale @ Entrane/Scale@ Exit	**2.008E-02**	Point	**6.426E-02**	Point
Imaint	Maintenance Area Work Truck,Idle	3.908E-03	Point	1.251E-02	Point
	Maintenance Area Water Truck, Idle	1.313E-03		3.501E-03	
	Total	**5.221E-03**		**1.601E-02**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	1.004E-02	Point	3.213E-02	Point
	Onsite Equipment, Operations	2.857E-02		9.143E-02	
	Total	**3.861E-02**		**1.236E-01**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	1.098E-02	Point	3.514E-02	Point
	Excavation Area, Work Truck, Idle	3.908E-03		1.251E-02	
	Onsite Equipment, Operations	2.118E-02		6.779E-02	
	Blasting	1.316E-01		0.000E+00	
	Total	**1.677E-01**		**1.154E-01**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**1.098E-02**	Point	**3.514E-02**	Point

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Onroad Onsite Average Daily Haul Truck Emissions

Year: 2020
Pollutant: NOx

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	***124***	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	10.666	g/mi in Tulare County for 2025 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**925.8**	grams/day
Daily Exhaust Emissions	**2.04**	pounds/day
Annual Exhaust Emissions	**1.072E-02**	grams/sec averaged over all hours of the year

Maximum Daily Onsite Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emis **1.2**

Maximum Daily Emissions	1110.98	grams/day
Maximum Daily Emissions	2.45	pounds/day
Maximum Daily Emissio	**3.429E-02**	**grams/sec**

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	124	trucks/day
EMCAC2017 Idling Emission Factor	27.983	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**2602.43**	g/day
Daily Idling Emissions	**5.73**	pounds/day
Annual Idling Emissions	**3.012E-02**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Maximum Daily Onsite Idling Emissions

Maximum Daily Emissions	3122.91	grams/day
Maximum DailyEmissions	6.88	grams/day
Maximum Daily Emissio	**9.639E-02**	**grams/sec**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**1.072E-02**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**1.004E-02**	**grams/sec**
Material Loading	**1.004E-02**	**grams/sec**
Weight Scale @ Exit	**1.004E-02**	**grams/sec**

Emission Total	**7.77**	**pounds/day**
	0.8743	**tons/year**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**3.429E-02**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**3.213E-02**	**grams/sec**
Material Loading	**3.213E-02**	**grams/sec**
Weight Scale @ Exit	**3.213E-02**	**grams/sec**

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Offroad Haul Truck Daily Average Daily Emissions

Year: 2025
Pollutant: NOx (Unmitigated)

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year		
Number of Trucks	2	trucks		
Average Truck Speed	5	mph		
Increased Hours of Operation	***6.9***	hours/day		
Trip Distance	830	meters or	0.52	miles
Travel Time	0.103	hrs/trip		
Daily Trips	67	trips/day/truck		
	134	trips/day for 2 trucks		
CalEEMod Exhaust Emission Factor	0.26	g/hp-hr (Tier 4)		
Equipment Size	385.00	hp		
Load Factor	0.38			
Work Day	9	hours/day		

Daily Average Exhaust Emissions	524.92	grams/day
Daily Average Exhaust Emissions	1.16	pounds/day
Annual Average Exhaust Emissions	6.076E-03	grams/sec averaged over the entire year

Average Daily Osite Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	134	events
EMCAC2017 Idling Emission Factor	28.360	g/hr in Tulare County for 2025
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	1897.61	grams/day
Daily Average Idling Emissions	4.18	pounds/day
Annual Average Idling Emissions	2.196E-02	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	6.076E-03	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	1.098E-02	grams/sec
Offload area to crusher	1.098E-02	grams/sec

Emission Total	**5.34**	**pounds/day**
	0.6003	**tons/year**

Offroad Haul Truck Maximum Daily Emissions

Maximum Daily Onsite Exhaust Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emi	**1.2**	
Increased hours of Operation	8.28	hours/day

Maximum Daily Exhaust Emissions	**629.91**	**grams/day**
Maximum Daily Exhaust Emissions	**1.39**	**pounds/day**
Maximum Daily Exhaust Emissions	**1.944E-02**	**grams/sec**

Maximum Daily Onsite Idling Emissions

Maximum Daily Idling Emissions	**2277.13**	**grams/day**
Maximum Daily Idling Emissions	**5.02**	**pounds/day**
Maximum Daily Idling Emissions	**7.028E-02**	**grams/sec**

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	1.944E-02	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	3.514E-02	grams/sec
Offload area to crusher	3.514E-02	grams/sec

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	Comments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.9	0.88	197	422	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	7.9	2.80	224	944	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	7.9	7.88	1,772	3,797	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.9	0.72	133	318	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.4	0.36	67	159	Gasoline 9,500 watt continuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	7.9	2.80	224	944	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	7.9	7.88	1,772	3,797	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	7.9	7.88	1,772	3,797	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	7.9	2.80	224	944	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	7.9	7.88	1,772	3,797	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	7.9	7.88	1,772	3,797	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	2.6	2.16	399	954	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	7.9	7.88	1,772	3,797	
11	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	7.9	7.88	1,772	3,797	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	3.5	0.39	10	110	Limited Use
				4572.1			21,543					17,424	38,967	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	700,000
Increase Fraction	0.875

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	Nox g/bhp-hr	Load Factor	Increased Hours/Year	HP x Nox Factor	Weighted Avg Nox/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	4	0.26	0.44	197	78	0.00	6,757		0.00
2	HITACHI	EX700H Excavator	1991	450	4	0.26	0.38	224	117	0.00	9,959		0.00
3	CAT	CAT 980G Loader	2001	300	4	0.26	0.36	1,772	78	0.03	49,754		0.01
4	GENIE	S60 4X2 BOOM LIFT	1999	48	4	2.75	0.31	133	132	0.02	5,446		0.02
5	BOBCAT	250 WELDER	2008	12.5	4	2.75	0.45	67	34	0.01	1,029		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	4	0	0.38	1,772	0	0.00	0		0.00
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	4	0.26	0.38	224	118	0.00	10,048		0.00
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	4	2.74	0.37	1,772	183	0.28	119,995		0.34
9	GENIE	10,000 LB LIFT	2007	82	4	0.26	0.2	1,772	21	0.03	7,555		0.00
10	KOMATSU	ROCK TRUCK	2010	385	4	0	0.38	1,772	0	0.00	0		0.00
11	TEREX	300LC-2 EXCAVATOR	2007	197	4	0.26	0.38	224	51	0.00	4,360		0.00
12	CAT	980H WHEEL LOADER	2007	355	4	0.26	0.36	1,772	92	0.03	58,876		0.02
13	CAT	980M WHEEL LOADER	2015	378	4	0.26	0.36	1,772	98	0.03	62,690		0.02
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	1.29	0.38	399	226	0.03	34,253		0.05
15	BOBCAT	SKID STEER S570	2017	66.8	4	2.74	0.37	1,772	183	0.28	119,995		0.34
16	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	1.29	0.5	1,772	538	0.13	476,572		0.64
17	GROVE	RT74 CRANE	1988	200	4	0.26	0.29	0	52	0.00	0		0.00
				4272.1		**15.9**		**17,415**	**2,002**	**0.87**	**967,290**		**1.44**
Fleet Average for ARB Offroad Fleet Reg Compliance									0.47				

	Annual NOx Emissions (grams/year)	Annual Nox Emissions (pounds/year)	Daily NOx Emissions (pounds/day)	Annual Average NOx Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	555,455	1223.47	5.44	2.857E-02
Equipment Operating at the haul truck location (highliighted in blue)	411,835	907.12	4.03	2.118E-02
Total (based on increased number of project hours)	967,290	2130.59	9.47	4.976E-02
		1.065	**tons/year**	

Factor to Convert Annual Daily Average to Maxximum DailyEmis	**1.2**	
Hours of Operation	9	hours/day

	Maximum Daily NOx Emissions (pounds/day)	Maximum Daily NOx Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	6.53	9.143E-02
Equipment Operating at the haul truck location (highliighted in blue)	4.84	6.779E-02
Total (based on increased number of project hours)	11.36	1.592E-01

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Year: **2025**
Pollutant: **NOx**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	7	2	1	2	7	14.0	140.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.

Daily Operations 9 hours

Factor to Convert Annual Average Emissions to Maximum Daily Emis **1.2**

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 8.2632 g/mi in Tulare County for 2025 (average from 5 to 15 mph)

Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)

Daily Average Emissions	1156.84	grams/day
Daily Average Emissions	2.55	pounds/day
Annual Average Emissions	1.339E-02	grams/sec

Daily Maximum Onsite Exhaust Emissions

Maximum Daily Exhaust Emissions	1388.2	grams/day
Maximum Daily Exhaust Emissions	3.058	pounds/day
Maximum Daily Exhaust Emissions	3.571E-02	grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)

Emission Factor g/mile T7 Construction	28.3600	g/hr in Tulare County for 2025	
Daily Average Emissions	113.440	grams/day	
DailyAverage Emissions	0.250	pounds/day	
Annual Average Emissions	1.313E-03	grams/sec	averaged over all hours of the year

Average Daily Onsite Idle Emissions

Maximum Daily Idling Emissions	136.13	grams/day
Maximum Daily Idling Emissions	0.30	pounds/day
Maximum Daily Idling Emissions	3.501E-03	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	5.598E-04	grams/sec
Travel emissions along the Onroad onsite haul truck route	7.531E-04	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 1.313E-03 grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad truck route and 1 truck covers the onroad haul truck toure

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Exhaust Emissions Allocated along each route

Travel emissions along the offroad haul truck route	1.522E-02	grams/sec
Travel emissions along the Onroad onsite haul truck rou	2.048E-02	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 3.501E-03 grams/sec

Emission Total	**2.798**	**pounds/day**
	0.3148	**tons/year**

Deer Creek Mine Expansion - Tulare County

2025 **Project Development @ 700,000 tons/year**

Year:	2025
Pollutant:	NOx

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	142		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	***1,500,000***	142	blasts/yr
Increased Blasts from Project/Yr		66	

Blasting Emission Factors with ANFO	**Nox (lbs/ton)**
	17

Average Daily Emission Calculations

	NOx Emissions (lbs/year)	NOx Emissions (tons/Yr)	NOx Emissions (pounds/day)	Annual Average NOx Emissions (grams/sec)	Maximum Daily Emissions	
Net Increase from Project	5637	**2.82**	25.05	1.316E-01	0	no change from the base case on a daily nbasis

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explosives)
5 tons of ANFO/blast

Emission Allocation

All blasting emissions will be represented as a point source at the excavation area.

Deer Creek Mine Expansion - Tulare County

2025 Project Development @ 700,000 tons/year

Average Daily Onsite Emission Estimates for Work Vehicles

Year: **2025**
Pollutant: **NOx**

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***2.8***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Factor to Convert Annual Average Daily Emissions to Maximum Daily Emissio 1.2

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	11.2	miles/day
EMFAC2017 Exhaust Emission Factor	2.147	g/mile for Tlare County in 2025
Averge Daily Exhaust Emissions	24.04	g/day
Averge Daily Exhaust Emissions	0.053	pounds/day
Annual Average Exhaust Emissions	2.783E-04	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	64.99	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	454.93	grams/day
Average Daily Idling Emissions	1.002	pounds/day
Annual Average Idling Emissoins	5.265E-03	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT1

Maximum Daily Exhaust Emissions	28.852	grams/day
Maximum Daily Exhaust Emissions	0.064	pounds/day
Maximum Daily Exhaust Emissions	8.905E-04	grams/sec

Maximum Daily Idling Emissions	545.916	grams/day
Maximum Daily Idling Emissions	1.202	pounds/day
Maximum Daily Idling Emissions	1.685E-02	grams/sec

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	5.6	miles/day
EMFAC2017 Exhaust Emission Factor	1.744	g/mile for Tulare County in 2025
Averge Daily Exhaust Emissions	9.76	g/day
Averge Daily Exhaust Emissions	0.022	pounds/day
Annual Average Exhaust Emissions	1.130E-04	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	62.97	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	220.40	grams/day
Average Daily Idling Emissions	0.485	pounds/day
Annual Average Idling Emissoins	2.551E-03	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT2

Maximum Daily Exhaust Emissions	11.717	grams/day
Maximum Daily Exhaust Emissions	0.0258	pounds/day
Maximum Daily Exhaust Emissions	3.616E-04	grams/sec

Maximum Daily Idling Emissions	264.474	grams/day
Maximum Daily Idling Emissions	0.5825	pounds/day
Maximum Daily Idling Emissions	8.163E-03	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	1.956E-04	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	1.956E-04	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area and	3.908E-03	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	3.908E-03	grams/sec

Emission Total	**1.562**	**pounds/day**
	0.176	**tons/year**

Emission Allocation

Exhaust Emissions
Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Maximum Daily Exhaust Emissons along onroad-offroad haul truck route:	6.261E-04	grams/sec
Maximum Daily Exhaust Emissons along offroad haul truck route:	6.261E-04	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area anc	1.251E-02	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	1.251E-02	grams/sec

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: TULARE
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	NOx_RUNEX
TULARE	2025	T7 tractor	Aggregated	5	DSL	13.93
TULARE	2025	T7 tractor	Aggregated	10	DSL	10.58
TULARE	2025	T7 tractor	Aggregated	15	DSL	7.49
TULARE	2025	T7 tractor	Aggregated	20	DSL	5.97
TULARE	2025	T7 tractor	Aggregated	25	DSL	4.66

Average Emission Factors (g/mile) 5 mph to 15 mph

	NOx_RUNEX
T7 tractor	10.6661

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	NOx IDLEX emission_rate
2025	Annual	Tulare (SJV)	T7 tractor	Dsl	NOx	27.9831

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	NOx_RUNEX
TULARE	2025	T7 single construction	Aggregated	5	DSL	10.730
TULARE	2025	T7 single construction	Aggregated	10	DSL	8.221
TULARE	2025	T7 single construction	Aggregated	15	DSL	5.839

Average (5-15mph)
NOx_RUNEX
8.263

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	NOx_IDLEX
2025	Annual	Tulare (SJV)	T7 Single Construction	Dsl	IDLEX	28.360

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	NOx_RUNEX
TULARE	2025	LHD1	Aggregated	5	DSL	2.128
TULARE	2025	LHD1	Aggregated	10	DSL	2.158
TULARE	2025	LHD1	Aggregated	15	DSL	2.155
					Average 5-15mpl	2.147
TULARE	2025	LHD2	Aggregated	5	DSL	1.757
TULARE	2025	LHD2	Aggregated	10	DSL	1.757
TULARE	2025	LHD2	Aggregated	15	DSL	1.717
					Average 5-15mpl	1.744

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	NOx_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	64.99
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	62.97

Deer Creek Mine Expansion - Tulare Cou **2025** **Project Development @ 700,000 tons/year**

Summary of Daily Emissions **ONSITE ONLY**

Year: **2025**
Pollutant: **PM10 Ex**

Source	**Annual Total Exhaust tons/year**
Drilling amd Blasting	0.000
Offeoad Equipment	0.011
Water Trucks	0.004
Work Trucks -	0.003
OnRoad Onsite Haul Trucks -	0.003
Offroad Haul Trucks	0.004
Employee Commute	0.000
Unpaved Road Dust (fugitive dust)	0.000
Dust (loading, wind, storage piles, unpaved roads)	0.000
Permitted Sources	0.000
Total Project Emissions	**0.025**

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year
AERMOD Emission Sources

Year: 2025
Pollutant: PM10 Ex

Source ID	Source Component	Annual Average Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Type
EOnOnHaul	Onroad, Onsite Haul Trucks, Exhaust	1.09E-04	Line-Volume	3.474E-04	Line Volune
	Water Trucks, Exhaust	2.20E-07		2.047E-04	
	Work Trucks.Exhaust	1.49E-05		4.756E-05	
	Total	**1.24E-04**		**5.997E-04**	
EOffHaul	Offroad Haul Trucks,Exhaust	1.869E-04	Line Volume	5.982E-04	Line Volume
	Water Trucks.Exhaust	2.202E-07		2.754E-04	
	Work Trucks,Exhaust	1.486E-05		4.756E-05	
	Total	**2.020E-04**		**9.211E-04**	
Iscale	Onroad, Onsite Haul Trucks, Idle (Scale @ Entrane/Scale@ Exit	**7.232E-06**	Point	**2.314E-05**	Point
Imaint	Maintenance Area Work Truck,Idle	4.845E-05	Point	1.550E-04	Point
	Maintenance Area Water Truck, Idle	5.165E-07		1.377E-06	
	Total	**4.896E-05**		**1.564E-04**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	3.616E-06	Point	1.157E-05	Point
	Onsite Equipment, Operations	2.769E-04		8.860E-04	
	Total	**2.805E-04**		**8.976E-04**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	4.320E-06	Point	1.382E-05	Point
	Excavation Area, Work Truck, Idle	4.845E-05		1.550E-04	
	Onsite Equipment, Operations	2.555E-04		8.175E-04	
	Total	**3.082E-04**		**9.864E-04**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**4.320E-06**	Point	**1.382E-05**	Point

.

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Onroad Onsite Average Daily Haul Truck Emissions

Year: 2025
Pollutant: PM10 Ex

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	***124***	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	0.108	g/mi in Tulare County for 2025 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**9.4**	grams/day
Daily Exhaust Emissions	**0.0207**	pounds/day
Annual Exhaust Emissions	**1.086E-04**	grams/sec averaged over all hours of the year

Maximum Daily Onsite Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emission 1.2

Maximum Daily Emissions	11.26	grams/day
Maximum Daily Emissions	0.02	pounds/day
Maximum Daily Emissio	**3.474E-04**	**grams/sec**

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	124	trucks/day
EMCAC2017 Idling Emission Factor	0.010	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**0.94**	g/day
Daily Idling Emissions	**0.0021**	pounds/day
Annual Idling Emissions	**1.085E-05**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Maximum Daily Onsite Idling Emissions

Maximum Daily Emissions	1.12	grams/day
Maximum DailyEmissions	0.00	grams/day
Maximum Daily Emissio	**3.471E-05**	**grams/sec**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**1.086E-04**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**3.616E-06**	**grams/sec**
Material Loading	**3.616E-06**	**grams/sec**
Weight Scale @ Exit	**3.616E-06**	**grams/sec**

Emission Tota	**0.02**	**pounds/day**
	0.0026	**tons/year**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**3.474E-04**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**1.157E-05**	**grams/sec**
Material Loading	**1.157E-05**	**grams/sec**
Weight Scale @ Exit	**1.157E-05**	**grams/sec**

Deer Creek Mine Expansion - Tulare County **2025** **Project Development @ 700,000 tons/year**

Offroad Haul Truck Daily Average Daily Emissions

Year: **2025**
Pollutant: **PM10 Ex** (Unmitigated)

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year	
Number of Trucks	2	trucks	
Average Truck Speed	5	mph	
Increased Hours of Operation	***6.9***	hours/day	
Trip Distance	830	meters or	0.52 miles
Travel Time	0.103	hrs/trip	
Daily Trips	67	trips/day/truck	
	134	trips/day for 2 trucks	
CalEEMod Exhaust Emission Factor	0.01	g/hp-hr (Tier 4)	
Equipment Size	385.00	hp	
Load Factor	0.38		
Work Day	9	hours/day	

Daily Average Exhaust Emissions	16.15	grams/day
Daily Average Exhaust Emissions	0.04	pounds/day
Annual Average Exhaust Emission	1.869E-04	grams/sec averaged over the entire year

Average Daily Osite Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	134	events
EMCAC2017 Idling Emission Factor	0.011	g/hr in Tulare County for 2025
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	0.75	grams/day
Daily Average Idling Emissions	0.00	pounds/day
Annual Average Idling Emissions	8.640E-06	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	1.869E-04	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	4.320E-06	grams/sec
Offload area to crusher	4.320E-06	grams/sec

Emission Total	**0.04**	**pounds/day**
	0.0042	**tons/year**

Offroad Haul Truck Maximum Daily Emissions

Maximum Daily Onsite Exhaust Emissions

Factor to Convert Average Daily Emissions to Maximum Daily En	**1.2**	
Increased hours of Operation	8.28	hours/day

Maximum Daily Exhaust Emissions	**19.38**	**grams/day**
Maximum Daily Exhaust Emissions	**0.04**	**pounds/day**
Maximum Daily Exhaust Emissions	**5.982E-04**	**grams/sec**

Maximum Daily Onsite Idling Emissions

Maximum Daily Idling Emissions	**0.90**	**grams/day**
Maximum Daily Idling Emissions	**0.00**	**pounds/day**
Maximum Daily Idling Emissions	**2.765E-05**	**grams/sec**

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	########	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	########	grams/sec
Offload area to crusher	########	grams/sec

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	PM10mments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.9	0.88	197	422	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	7.9	2.80	224	944	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	7.9	7.88	1,772	3,797	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.9	0.72	133	318	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.4	0.36	67	159	Gasoline 9,500 watt PM10ntinuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	7.9	2.80	224	944	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	7.9	7.88	1,772	3,797	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	7.9	7.88	1,772	3,797	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	7.9	2.80	224	944	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	7.9	7.88	1,772	3,797	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	7.9	7.88	1,772	3,797	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	2.6	2.16	399	954	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	7.9	7.88	1,772	3,797	
11	ATLAS PM10PPM10	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	7.9	7.88	1,772	3,797	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	3.5	0.39	10	110	Limited Use
				4572.1			21,543					17,424	38,967	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	700,000
Increase Fraction	0.875

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	PM10 g/bhp-hr	Load Factor	Increased Hours/Year	HP x PM10 Factor	Weighted Avg PM10/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	4	0.008	0.44	197	2	0.00	208		0.00
2	HITACHI	EX700H Excavator	1991	450	4	0.008	0.38	224	4	0.00	306		0.00
3	CAT	CAT 980G Loader	2001	300	4	0.008	0.36	1,772	2	0.00	1,531		0.00
4	GENIE	S60 4X2 BOOM LIFT	1999	48	4	0.008	0.31	133	0	0.00	16		0.00
5	BOBCAT	250 WELDER	2008	12.5	4	0.008	0.45	67	0	0.00	3		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	4	0	0.38	1,772	0	0.00	0		0.00
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	4	0.008	0.38	224	4	0.00	309		0.00
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	4	0.008	0.37	1,772	1	0.00	350		0.00
9	GENIE	10,000 LB LIFT	2007	82	4	0.008	0.2	1,772	1	0.00	232		0.00
10	KOMATSU	ROCK TRUCK	2010	385	4	0	0.38	1,772	0	0.00	0		0.00
11	TEREX	300LC-2 EXCAVATOR	2007	197	4	0.008	0.38	224	2	0.00	134		0.00
12	CAT	980H WHEEL LOADER	2007	355	4	0.008	0.36	1,772	3	0.00	1,812		0.00
13	CAT	980M WHEEL LOADER	2015	378	4	0.008	0.36	1,772	3	0.00	1,929		0.00
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	0.008	0.38	399	1	0.00	212		0.00
15	BOBCAT	SKID STEER S570	2017	66.8	4	0.008	0.37	1,772	1	0.00	350		0.00
16	ATLAS PM10PPM10	FLEXIROC T50 ROCK DRILL	2011	417	4I	0.008	0.5	1,772	3	0.00	2,955		0.00
17	GROVE	RT74 CRANE	1988	200	4	0.008	0.29	0	2	0.00	0		0.00
				4272.1		**0.12**		**17,415**	**28**	**0.01**	**10,349**		**0.01**
Fleet Average for ARB Offroad Fleet Reg PM10mpliance									0.01				

	Annual PM10 Emissions (grams/year)	Annual PM10 Emission (pounds/year)	Daily PM10 Emission (pounds/day)	Annual Average PM10 Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	5,383	11.86	0.05	2.769E-04
Equipment Operating at the haul truck location (highliighted in blue)	4,966	10.94	0.05	2.555E-04
Total (based on increased number of project hours)	10,349	22.80	0.10	5.324E-04
		0.011 tons/year		

Factor to PM10nvert Annual Daily Average to Maxximum DailyEmiss	1.2	
Hours of Operation	9	hours/day

	Maximum Daily PM10 Emissions (pounds/day)	Maximum Daily PM10 Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	0.06	8.860E-04
Equipment Operating at the haul truck location (highliighted in blue)	0.06	8.175E-04
Total (based on increased number of project hours)	0.12	1.704E-03

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Year: **2025**
Pollutant: **PM10 Ex**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	7	2	1	2	7	14.0	140.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.
Emission Factor to Convert Annual Daily Average Emissions' to Maximum Daily Emissic 1.2
Daily Operations 9 hours

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 0.1111 g/mi in Tulare County for 2025 (average from 5 to 15 mph)

Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)

Daily Average Emissions	15.55	grams/day
Daily Average Emissions	0.03	pounds/day
Annual Average Emissions	1.800E-04	grams/sec

Daily Maximum Onsite Exhaust Emissions

Maximum Daily Exhaust Emissions	18.7	grams/day
Maximum Daily Exhaust Emissions	0.041	pounds/day
Maximum Daily Exhaust Emissions	4.801E-04	grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)

Emission Factor g/mile T7 Construction	0.0112	g/hr in Tulare County for 2025	
Daily Average Emissions	0.045	grams/day	
DailyAverage Emissions	0.000	pounds/day	
Annual Average Emissions	5.165E-07	grams/sec	averaged over all hours of the year

Average Daily Onsite Idle Emissions

Maximum Daily Idling Emissions	0.05	grams/day
Maximum Daily Idling Emissions	0.00	pounds/day
Maximum Daily Idling Emissions	1.377E-06	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	2.202E-07	grams/sec
Travel emissions along the Onroad onsite haul truck route	2.963E-07	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 5.165E-07 grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad truck route and 1 truck covers the onroad haul truck toure

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Exhaust Emissions Allocated along each route

Travel emissions along the offroad haul truck route	2.047E-04	grams/sec
Travel emissions along the Onroad onsite haul truck rou	2.754E-04	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 1.377E-06 grams/sec

Emission Total	**0.034**	**pounds/day**
	0.0039	**tons/year**

Deer Creek Mine Expansion - Tulare County

2025 **Project Development @ 700,000 tons/year**

Average Daily Onsite Emission Estimates for Work Vehicles

Year: **2025**
Pollutant: **'M10 Ex**

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***2.8***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Factor to Convert Annual Average Daily Emissions to Maximum Daily Emissio: 1.2

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	11.2	miles/day
EMFAC2017 Exhaust Emission Factor	0.151	g/mile for Tulare County in 2025
Averge Daily Exhaust Emissions	1.69	g/day
Averge Daily Exhaust Emissions	0.004	pounds/day
Annual Average Exhaust Emissions	1.953E-05	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.79	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	5.56	grams/day
Average Daily Idling Emissions	0.012	pounds/day
Annual Average Idling Emissoins	6.435E-05	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT1

Maximum Daily Exhaust Emissions	2.025	grams/day
Maximum Daily Exhaust Emissions	0.004	pounds/day
Maximum Daily Exhaust Emissions	6.249E-05	grams/sec

Maximum Daily Idling Emissions	6.672	grams/day
Maximum Daily Idling Emissions	0.015	pounds/day
Maximum Daily Idling Emissions	2.059E-04	grams/sec

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	5.6	miles/day
EMFAC2017 Exhaust Emission Factor	0.157	g/mile for Tulare County in 2025
Averge Daily Exhaust Emissions	0.88	g/day
Averge Daily Exhaust Emissions	0.002	pounds/day
Annual Average Exhaust Emissions	1.020E-05	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.80	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	2.81	grams/day
Average Daily Idling Emissions	0.006	pounds/day
Annual Average Idling Emissoins	3.254E-05	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT2

Maximum Daily Exhaust Emissions	1.057	grams/day
Maximum Daily Exhaust Emissions	0.0023	pounds/day
Maximum Daily Exhaust Emissions	3.263E-05	grams/sec

Maximum Daily Idling Emissions	3.374	grams/day
Maximum Daily Idling Emissions	0.0074	pounds/day
Maximum Daily Idling Emissions	1.041E-04	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	1.486E-05	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	1.486E-05	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area and	4.845E-05	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	4.845E-05	grams/sec

Emission Total	**0.024**	**pounds/day**
	0.0027	**tons/day**

Emission Allocation

Exhaust Emissions
Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Maximum Daily Exhaust Emissons along onroad-offroad haul truck route:	4.756E-05	grams/sec
Maximum Daily Exhaust Emissons along offroad haul truck route:	4.756E-05	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area a	1.550E-04	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	1.550E-04	grams/sec

EMFAC2017 (v1.0.2) Emission Rates
Region Type: PM10unty
Region: TULARE
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM10_Total	PM10 EXH	PM10 TW	PM10 BW
TULARE	2025	T7 tractor	Aggregated	5	DSL	0.11	0.0120	0.0360	0.0617
TULARE	2025	T7 tractor	Aggregated	10	DSL	0.11	0.0106	0.0360	0.0617
TULARE	2025	T7 tractor	Aggregated	15	DSL	0.11	0.0084	0.0360	0.0617
TULARE	2025	T7 tractor	Aggregated	20	DSL	0.10	0.0071	0.0360	0.0617
TULARE	2025	T7 tractor	Aggregated	25	DSL	0.10	0.0068	0.0360	0.0617

Average Emission Factors (g/mile) 5 mph to 15 mph

	PM10_RUNEX
T7 tractor	0.1081

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	PM10 IDLEX emission_rate
2025	Annual	Tulare (SJV)	T7 tractor	Dsl	PM10	0.0101

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM10_TOTAL	PM10 RUNEX	PM10 TW	PM10 BW
TULARE	2025	T7 single PM10nstructio	Aggregated	5	DSL	0.114	0.0161	0.036	0.062
TULARE	2025	T7 single PM10nstructio	Aggregated	10	DSL	0.112	0.0138	0.036	0.062
TULARE	2025	T7 single PM10nstructio	Aggregated	15	DSL	0.108	0.0102	0.036	0.062

Average (5-15mph)

PM10_RUNEX
0.111

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	PM10_IDLEX
2025	Annual	Tulare (SJV)	T7 Single PM10nstructior	Dsl	IDLEX	0.011

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM10_TOTAL	PM10 RUNEX	PM10 TW	PM10 BW
TULARE	2025	LHD1	Aggregated	5	DSL	0.169	0.0808	0.012	0.076
TULARE	2025	LHD1	Aggregated	10	DSL	0.148	0.0600	0.012	0.076
TULARE	2025	LHD1	Aggregated	15	DSL	0.134	0.0458	0.012	0.076
					Average 5-15mpl	0.151			
TULARE	2025	LHD2	Aggregated	5	DSL	0.173	0.071	0.012	0.089
TULARE	2025	LHD2	Aggregated	10	DSL	0.156	0.055	0.012	0.089
TULARE	2025	LHD2	Aggregated	15	DSL	0.144	0.043	0.012	0.089
					Average 5-15mpl	0.157			

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	PM10_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	0.79
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	0.80

Deer Creek Mine Expansion - Tulare Cou 2025 Project Development @ 700,000 tons/year
Summary of Annual Average Emissions

Year: **2025**

Pollutant: **PM10 Fugitive Dust**

Emission Factor to Convert Annunal Daily Average Emissions to Maximum DailyEmissions 1.2

Source	Annual Ave pounds/day	Total tons/year	Max Daily (pounds/day)
OnRoad Onsite Haul Trucks - Fugitive Dust Emissions	23.74	2.67	28.49
Offroad Trucks - Fugitive Dust Emissions	40.22	4.53	48.27
Storage Piles - Fugitive Dust	1.11	0.12	1.33
Wind Erosion - Fugitive Dust	2.27	0.26	2.72
Truck Loading - Fugitive Dust	0.62	0.07	0.75
Permitted Sources	5.76	0.65	6.91
Blasting	0.00	0.02	0.00
Total	73.72	8.32	88.47

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

AERMOD Emission Sources

Year: 2025
Pollutant: PM10 Fugitive Dust
Annual Average Emissions

Source ID	Source Component	Average Daily Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Tyle
EOnOnHaul	Onroad, Onsite Haul Trucks, Unpaved Road Dust	1.25E-01	Line-Volume	3.993E-01	Line-Volume
EOffHaul	Offroad Haul Trucks, Unpaved Road Dust	2.114E-01	Line Volume	6.763E-01	Line Volume
Spiles	Storage Piles Fugitive Dust	2.054E-06	Circular Area	5.917E-06	Circular Area
Permit1	Fugitive Dust at the Offroad Truck Unloading Area	1.513E-02	Point	9.683E-02	Point
Permit2	Fugitive Dust at the Excavation Area (Truck loading, boring, blasting, and wind erosion)	2.936E-02	Point	1.332E-01	Point
Matload	Loading of Onroad Haul Trucks	1.635E-03	Point	5.231E-03	Point

Deer Creek Mine Expansion - Tulare Cou 2025 Project Development @ 700,000 tons/year

Year: 2025
Pollutant: **PM10 Fugitive Dust**

Annual Average Onsite Project Incremental Unpaved Road Dust Emissions from On-Road Haul Trucks

Average Daily Haul Trucks	124	trucks/day
Onsite Round trip Distance	0.7	miles
Average Vehicle Speed	5	mph
Operational Day	9	hours

Emission Factor: $E = k\,(s/12)^a (W/3)^b$

	k (constant PM2.5)	s (% silt content)	W (vehicle Weight tons)	PM10 EF (lbs/vmt)
Loaded Trucks 40 tons	1.5	5	40	2.1884
Unloaded Trucks 15 tons	1.5	5	15	1.4075
Average				1.0942

Annual VMT	19530	miles/year
Annual PM10 Fdust Emissions	21369.6	pounds/year
(Unmitigated)	10.7	tons/year
Annual PM10 FDust Emissions	5342.4	pounds/year
(Mitigated)	2.7	tons/year
	23.7	pounds/day

Average PM10 Fdust Emissions	**1.248E-01**	**grams/sec averaged over all hours of the year**

Conversion of Average Daily Emissions to Maximum Daily Emissions: 1.2

Maximum Daily Number of Trucl	149	trucks/day
Max Daily VMT	104.16	miles/day
Max Daily PM10 FDUST	114.0	pounds/day (Unmitigated)
Max Daily PM10 FDUST	28.49	pounds/day (mitigated)

Max Daily PM10 FDUST	**3.993E-01**	**grams/sec**

Emission Total	**23.7**	**pounds.day**
	2.671	**tons/year**

Deer Creek Mine Expansion - Tulare Count 2025 Project Development @ 700,(

Year: 2025
Pollutant: **PM10 Fugitive Dust**

Annual Average Onsite Project Incremental Exhaust Emissions

Days of Operation	225	days/year		
Number of Trucks	2	trucks		
Average Truck Speed	5	mph		
Increased Hours of Operation	6.9	hours/day		
Trip Distance	830	meters or	0.52	miles
Travel Time	0.103	hrs/trip		
Daily Trips	67	trips/day/truck		
	134	trips/day for 2 trucks		
Facility Operations	9	hours/day		

Emission Factor: $E = k\,(s/12)^a (W/3)^b$

	k (constant PM10)	s (% silt content)	W (vehicle Weight tons)	PM10 EF (lbs/vmt)
Loaded Trucks 80 tons	1.5	5	80	2.9894
Unloaded Trucks 40 tons	1.5	5	40	2.1884
Average				1.4947

Annual VMT	15525	miles/year
Annual PM10 Fdust Emissions	23205	pounds/year
(Unmitigated)	11.6	tons/year
Annual PM10 FDust Emissions	9050.1	pounds/year
(Mitigated)	4.5	tons/year
	40.2	pounds/day
Average PM10 Fdust Emissions	**2.114E-01**	**grams/sec averaged over all hours of the yea**

Factor to convert average emssions to maximum emissions: **1.2**

Maximum Daily VMT	83	miles/day
Maximun Daily PM10 FDUST	123.76	pounds/day (unmitigated)
Maximun Daily PM10 FDUST	1.73	grams/sec (unmitigated)
Maximum Daily PM10 FDUST	48.27	pounds/day (mitigated)
Maximun Daily PM10 FDUST	**6.763E-01**	**grams/sec (mitgated)**

Emission Total	**40.2**	**pounds/day**
	4.53	**tons/year**

)00 tons/year

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Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Storage Piles

	PM10 EF (lb/acre/day)	Control Efficiency	Pile Size (acres)	PM10 FDust lb/hour	lb/day	tons/year
Existing Storage Piles	7.1	0.39	0.8	0.22	2.22	0.25
Storage Piles with Project	7.1	0.39	1.2	0.33	3.32	0.37
Increase From Project	7.1	0.39	0.4	0.11	1.11	0.12

Pile Size (Increase from Project) 0.4 acres or 2833 m2

Average PM10 Fdust Increase 1.11 pounds/day (mitigated)
Average PM10 Fdust Increase 0.00582 grams/sec averaged over all hours of the year
Average PM10 Fdust Increase 2.054E-06 gram/m2-sec area source emission rate

Factor to convert average emissions to maximum emisison: 1.2

Maximum Daily PM10 Fdust Increa: 5.917E-06 grams/m2-sec

Emission Total 1.11 pounds/day
0.12 tons/year

US EPA AP-42, Section 11.9, Western Surface Coal Mining, Table 11.9-1: http://www.epa.gov/ttnchie1/ap42/ch11/final/c11s09.pdf
The emission factor is 0.72*u for TSP; the "u" refers to the wind speed, which is an average of 4.5 knots (2.3 meters per second or 5.2 miles per hour)

TSP (<=30 mm) = 0.72 x u lb TSP/acre-hr: Where u (wind speed) = 5.2 mph
0.72 x 5.2 = 3.74 lb TSP/acre-hr
PM10 = TSP x SF: Where SF (Scaling Factor) = 0.19
PM10 = 3.74 x 0.19 = 0.79 lb PM10/acre-hr x 10 operating hrs/day = 7.1 lb PM10/acre-day
PM2.5 = TSP x SF: Where SF (Scaling Factor) = 0.105
PM2.5 = 3.74 x 0.105 = 0.39 lb PM2.5/acre-hr x 10 operating hrs/day = 3.9 lb PM2.5/acre-day
A scaling factor for active storage pile PM10 was not provided in AP-42 Table 11.9-1. Therefore, a scaling factor was derived as follows:
The scaling factor for PM10 for bulldozing overburden (0.75 x PM15) was used as a basis. Since the scaling factor for bulldozing overburden is to be applied to the corresponding PM15 emission factor and since there is no data provided for PM15 for the active storage pile emissions, a PM15 value was estimated for the active storage piles using the ratio of PM15 to TSP provided for bulldozer overburden as follows
Bulldozing overburden TSP = 5.7 (s)1.2 / M1.3 lb/hr, where s (silt content) = 6.9%, and M (moisture content) = 7.9%.
Bulldozing overburden TSP = 5.7 x 6.91.2 / 7.91.3 = 3.94 lb/hr
Bulldozing overburden PM15 = 1.0 (s)1.5 / M1.4 lb/hr
Bulldozing overburden PM15 = 1.0 x 6.91.5 / 7.91.4 = 1.00 lb/hr
The ratio of PM15 to TSP = 1.00/3.94 = 0.25
Applying the PM15 to TSP ratio and PM10 scaling factor based on bulldozing overburden, a scaling factor for the active storage pile PM10 is estimated as 0.25 x 0.75 = 0.19.
The scaling factor for PM2.5 is 0.105, as defined in AP-42 Table 11.9-1, dated July 1998, and is applied to the TSP equation as noted in the referenced table
Assumes water spray for dust suppression at three per day and 61% emission reduction

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Wind Erosion

		Emission Factor (tons/acre/year		PM10 Emissions		
	Area (acres)	TSP	PM10 Emissions	lbs/hour	lb/day	tons/year
Existing	0.39	0.38	0.228	0.0203	0.4872	0.0889
With Project	0.73	0.38	0.228	0.0380	0.9120	0.1664
Increase from Project	0.34	0.38	0.228	0.0177	0.4248	0.0775

Exposed Area 0.34 acres or 1376 m2

Average PM10 Fdust Increase 2.232E-03 grams/sec averaged over all hours of the year

Factor to Convert Averager Emissions to Maximum Emssions 1.2

Maximum PM10 Fdust Increase 1.116E-04 grams/sec

Exposed area is assumed to be the proposed aggregate processing area, but not the drilling and blasting area consisting of rock surface.
Exposed areas are assumed to be the areas of the pit that are exposed, where topsoils are removed and drilling and blasting occur, as well as berms and benchs prior to stabilization.
Topsoils are removed and drilling and blasting occur, as well as berms and benchs prior to stablization. Since it is assumed that 17,000 square feet (0.39 acres) are disturbed for each blast and there are a maximum of 45 blasts per year, then 0.39 acres is assumed to be disturbed at any given time. Areas that are not disturbed consist of hard rock and have negligible potential for wind erosion.
Emission factor for PM10 from US EPA AP-42, Table 11.9-4 for total suspeded particulates (TSP). It is assumed that PM10 is 60% of TSP and PM10 is 3.1%, according to information in Table 11.9-2 for grading.
It is assumed that the daily and hourly estimates are over the entire year
The increase in area exposed is assumed to be proportional to the increase in annual throughput

Truck Loading to Off-Road 40 ton/load Haul Trucks

		Emission Factors (lbs/ton)	PM2.5 Emisions		
	Material Loaded	PM10	lbs/hour	lb/day	tons/year
Loading from Existing Ops	800,000	0.0001	0.04	0.36	0.04
Loading with Project	1,500,000	0.0001	0.07	0.67	0.08
Increase from Project	**700,000**	**0.0001**	**0.03**	**0.31**	**0.04**

				PM10 Emissions		
	PM10 EF (lb/acre/day)	Control Efficiency	Pile Size (acres)	lb/hour	lb/day	tons/year
Existing Storage Piles	7.1	0.39	0.8	0.22	2.22	0.25
Storage Piles with Project	7.1	0.39	1.2	0.33	3.32	0.37
Increase From Project	7.1	0.39	0.4	0.11	1.11	0.12

		Emissions Factors (tons/acre/year)		PM10 Emissions		
	Area (acres)	TSP	PM10	lbs/hour	lb/day	tons/year
Existing	0.39	0.38	0.228	0.0203	0.4872	0.0889
With Project	0.73	0.38	0.228	0.0380	0.9120	0.1664
Increase from Project	0.34	0.38	0.228	0.0177	0.4248	0.0775

Total Fugitive Dust

	PM10 tons/year	PM10 lb/day	Average Emission (grams/sec)
Existing	0.38	3.06	
With Project	0.62	4.90	
Increase from Project	0.24	1.84	**9.687E-03**

Factor to convert average emisions to maximmum emissions **1.20**

Maximum Daily Emissions 3.100E-02 grams/sec

Emission Total 2.27 pounds/day
0.255 tons/year

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 7

Truck Loading Dust

Truck Loading to On-Road 25 ton/load Haul Trucks

	Material Loaded (tons/year)	Emission Factors PM2.5	PM2.5 Emisio lbs/hour	lb/day
Loading from Existing Ops	800,000	0.0001	0.04	0.36
Loading with Project	1,500,000	0.0001	0.07	0.67
Increase from Project	**700,000**	**0.0001**	**0.03**	**0.31**

OPerational Hours 9 hours/day

Average PM2.5 FDust Increase 1.635E-03 grams/sec averaged over all hours of the year

Factor to convert average emissions to maximum emissions 1.2

Maximum Daily PM2.5 Emissions 5.231E-03 grams/sec

Truck Loading to Off-Road 40 ton/load Haul Trucks

	Material Loaded (tons/year)	Emission Factors PM2.5	PM2.5 Emisio lbs/hour	lb/day
Loading from Existing Ops	800,000	0.0001	0.04	0.36
Loading with Project	1,500,000	0.0001	0.07	0.67
Increase from Project	**700,000**	**0.0001**	**0.03**	**0.31**

Average PM2.5 FDust Increase 1.635E-03 grams/sec averaged over all hours of the year

Factor to convert average emissions to maximum emissions 1.2

Maximum Daily Emssions 5.231E-03 grams/sec

The PM10 emission factor is 0.0000460 lb/ton and the emission factor for PM2.5 is 0.0000130 lb/ton. The ratio of PM
Since the PM10 emission factor is estimated to be 0.00010 lb/ton, the emission factor for PM2.5 is estimated to be 0.
Emission factor for PM10 is from EPA AP-42, Table 11.19.2-2 (Emission Factors for Crushed Stone Processing Opera

based on AP-42 11.19.2, Final Section, updated August 2004. The PM10 emission factor 0.000046 lb/ton and the em
Since the PM10 emission factor is estimated to be 0.0001 lb/ton, the emission factor for PM2.5 is estimated to be 0.00
- Assumes 225 days/year and 9 hours/day

Emission Total 0.62 pounds/day
0.07 tons/year

700,000 tons/year

ns

tons/year
0.04
0.08
0.04

ns

tons/year
0.04
0.08
0.04

2.5 to PM10 is 0.0000130/0.0000460 = 0.283.
0001 x 0.283 lb/ton
tions). Website: http://www.epa.gov/ttnchie1/ap42/ch11/final/c11s1902.pdf

ission factor for PM2.5 to PM10 is 0.000013/0.000046 = 0.283.
01 x 0.283 = 0.0000283 lb/ton

Deer Creek Mine Expansion - Tulare Cou 2025 Project Development @ 700,000 tons/year

Permitted Equipment

Operational Hours 9 hours/day

Emissions from Permitted Equipment

	Throughput (tons/year)	PM10 Dust (lbs/day)	PM10 Dust (tons/year)
Existing Baseline Emissions	800,000	6.58	0.74
Permit Limit	1,500,000	12.34	1.39
Increase from Baseline from Project	700,000	5.76	0.65

Average PM10 FDust Increase	**3.03E-02**	**grams/sec averaged over all hours of the year**

Assume 1/2 Emissions Occur at the Excavation Area	**1.513E-02**	**grams/sec**
Assume 1/2 Emissions Occur at the Offroad Unloading Are	**1.513E-02**	**grams/sec**

Factor to Convert Average Emissions to Maximum Emissio	**1.2**

Assume 1/2 Emissions Occur at the Excavation Area	**9.683E-02**	**grams/sec**
Assume 1/2 Emissions Occur at the Offroad Unloading Are	**9.683E-02**	**grams/sec**

Emission Total	**5.759**	**pounds/day**
	0.648	**tons/year**

Project currently operating at 53% of Permitted Emission Limits
With Project the facility would operate at permitted limits.
SJVAPCD Permit S-4136-3-6

Source of PM2.5 dust: 18.5 percent of PM10 emissions, according to the values for controlled tertiary crushing in Table 11.19.2-1 from the USEPA AP-42 Section 11.19.2, Crushed Stone Processing and Pulverized Material Processing
Source of PM2.5 exhaust: CalEEMod manual (Appendix D, table 3.5) indicates PM2.5 is the same as PM10
Source of other values: San Joaquin Valley Air Pollution Control District, Authority to Construct

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	142		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	1,500,000	142	blasts/yr
Increased Blasts from Project/Yr		66	

Emission Factors

	PM10 (kg/Mg)
Wet Drilling Unfragmented Stone	0.00004

PM10 EF = 0.000014(A)^(1.5)(0.52) , where A = horizontal area in ft2 with a scaling factor for <10um of 0.52

PM10 Dust Emission Factor (lbs/blast) 0.060376618

Dust Emissions

		PM10 EF (lbs/blast)	**PM10 Emissions (lbs/day)**	**PM10 Emissions (tons/year)**
Baseline	Blasting	0.0604	0.0604	0.0023
	Drilling	0.65	0.6500	0.0246
	Total		**0.7104**	**0.0269**
With Project	Blasting	0.0604	0.0604	0.0043
	Drilling	0.65	0.6500	0.0462
	Total		**0.7104**	**0.0505**
Net Increase from Project	Blasting and Drilling		0.0000	0.0236

0.0007 g/sec average overal all hours

Daily rates are unchanged since the number of blasts per day would not change.

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explo
5 tons of ANFO/blast

Emission Total	**0.0236**	**tons/year**

s of year

osives)

Deer Creek Mine Expansion - Tulare Cou **2025** **Project Development @ 700,000 tons/year**

Summary of Daily Emissions **ONSITE ONLY**

Year: **2025**
Pollutant: **PM2.5 Ex**

Source	**Annual Total Exhaust tons/year**
Drilling amd Blasting	0.000
Offroad Equipment	0.011
Water Trucks	0.002
Work Trucks -	0.002
OnRoad Onsite Haul Trucks -	0.001
Offroad Haul Trucks	0.004
Employee Commute	0.000
Unpaved Road Dust (fugitive dust)	0.000
Dust (loading, wind, storage piles, unpaved roads)	0.000
Permitted Sources	0.000
Total Project Emissions	**0.021**

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year
AERMOD Emission Sources

Year: 2025
Pollutant: PM2.5 Ex

Source ID	Source Component	Annual Average Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Type
EOnOnHaul	Onroad, Onsite Haul Trucks, Exhaust	4.56E-05	Line-Volume	1.458E-04	Line Volune
	Water Trucks, Exhaust	2.11E-07		8.889E-05	
	Work Trucks.Exhaust	9.25E-06		2.961E-05	
	Total	**5.50E-05**		**2.643E-04**	
EOffHaul	Offroad Haul Trucks,Exhaust	1.869E-04	Line Volume	5.982E-04	Line Volume
	Water Trucks.Exhaust	2.107E-07		1.196E-04	
	Work Trucks,Exhaust	9.252E-06		2.961E-05	
	Total	**1.964E-04**		**7.474E-04**	
Iscale	Onroad, Onsite Haul Trucks, Idle (Scale @ Entrane/Scale@ Exit	**6.919E-06**	Point	**2.214E-05**	Point
Imaint	Maintenance Area Work Truck,Idle	4.635E-05	Point	1.483E-04	Point
	Maintenance Area Water Truck, Idle	4.941E-07		1.318E-06	
	Total	**4.685E-05**		**1.496E-04**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	3.460E-06	Point	1.107E-05	Point
	Onsite Equipment, Operations	2.769E-04		8.860E-04	
	Total	**2.803E-04**		**8.971E-04**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	4.133E-06	Point	1.323E-05	Point
	Excavation Area, Work Truck, Idle	4.635E-05		1.483E-04	
	Onsite Equipment, Operations	2.555E-04		8.175E-04	
	Total	**3.060E-04**		**9.790E-04**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**4.133E-06**	Point	**1.323E-05**	Point

.

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Onroad Onsite Average Daily Haul Truck Emissions

Year: 2025
Pollutant: PM2.5 Ex

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	***124***	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	0.045	g/mi in Tulare County for 2025 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**3.9**	grams/day
Daily Exhaust Emissions	**0.01**	pounds/day
Annual Exhaust Emissions	**4.556E-05**	grams/sec averaged over all hours of the year

Maximum Daily Onsite Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emi **1.2**

Maximum Daily Emissions	4.72	grams/day
Maximum Daily Emissions	0.01	pounds/day
Maximum Daily Emissio	**1.458E-04**	**grams/sec**

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	124	trucks/day
EMCAC2017 Idling Emission Factor	0.010	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**0.90**	g/day
Daily Idling Emissions	**0.00**	pounds/day
Annual Idling Emissions	**1.038E-05**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Maximum Daily Onsite Idling Emissions

Maximum Daily Emissions	1.08	grams/day
Maximum DailyEmissions	0.00	grams/day
Maximum Daily Emissio	**3.321E-05**	**grams/sec**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**4.556E-05**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**3.460E-06**	**grams/sec**
Material Loading	**3.460E-06**	**grams/sec**
Weight Scale @ Exit	**3.460E-06**	**grams/sec**

Emission Total	**0.01**	**pounds/day**
	0.001	**tons/year**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**1.458E-04**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**1.107E-05**	**grams/sec**
Material Loading	**1.107E-05**	**grams/sec**
Weight Scale @ Exit	**1.107E-05**	**grams/sec**

Deer Creek Mine Expansion - Tulare County **2025** **Project Development @ 700,000 tons/year**

Offroad Haul Truck Daily Average Daily Emissions

Year: **2025**
Pollutant: **PM2.5 Ex** (Unmitigated)

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year		
Number of Trucks	2	trucks		
Average Truck Speed	5	mph		
Increased Hours of Operation	***6.9***	hours/day		
Trip Distance	830	meters or	0.52	miles
Travel Time	0.103	hrs/trip		
Daily Trips	67	trips/day/truck		
	134	trips/day for 2 trucks		
CalEEMod Exhaust Emission Factor	0.01	g/hp-hr (Tier 4)		
Equipment Size	385.00	hp		
Load Factor	0.38			
Work Day	9	hours/day		

Daily Average Exhaust Emissions	16.15	grams/day
Daily Average Exhaust Emissions	0.04	pounds/day
Annual Average Exhaust Emission	1.869E-04	grams/sec averaged over the entire year

Average Daily Osite Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	134	events
EMCAC2017 Idling Emission Factor	0.011	g/hr in Tulare County for 2025
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	0.71	grams/day
Daily Average Idling Emissions	0.00	pounds/day
Annual Average Idling Emissions	8.266E-06	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	1.869E-04	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	4.133E-06	grams/sec
Offload area to crusher	4.133E-06	grams/sec

Emission Total	**0.04**	**pounds/day**
	0.004	**tons/year**

Offroad Haul Truck Maximum Daily Emissions

Maximum Daily Onsite Exhaust Emissions

Factor to Convert Average Daily Emissions to Maximum Daily E **1.2**

Increased hours of Operation 8.28 hours/day

Maximum Daily Exhaust Emissions	**19.38**	**grams/day**
Maximum Daily Exhaust Emissions	**0.04**	**pounds/day**
Maximum Daily Exhaust Emissions	**5.982E-04**	**grams/sec**

Maximum Daily Onsite Idling Emissions

Maximum Daily Idling Emissions	**0.86**	**grams/day**
Maximum Daily Idling Emissions	**0.00**	**pounds/day**
Maximum Daily Idling Emissions	**2.645E-05**	**grams/sec**

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	########	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	########	grams/sec
Offload area to crusher	########	grams/sec

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	PM2.5mments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.9	0.88	197	422	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	7.9	2.80	224	944	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	7.9	7.88	1,772	3,797	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.9	0.72	133	318	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.4	0.36	67	159	Gasoline 9,500 watt PM2.5ntinuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	7.9	2.80	224	944	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	7.9	7.88	1,772	3,797	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	7.9	7.88	1,772	3,797	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	7.9	2.80	224	944	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	7.9	7.88	1,772	3,797	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	7.9	7.88	1,772	3,797	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	2.6	2.16	399	954	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	7.9	7.88	1,772	3,797	
11	ATLAS PM2.5PPM2.5	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	7.9	7.88	1,772	3,797	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	3.5	0.39	10	110	Limited Use
				4572.1			21,543					17,424	38,967	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	700,000
Increase Fraction	0.875

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	PM2.5 g/bhp-hr	Load Factor	Increased Hours/Year	HP x PM2.5 Factor	Weighted Avg PM2.5/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	4	0.008	0.44	197	2	0.00	208		0.00
2	HITACHI	EX700H Excavator	1991	450	4	0.008	0.38	224	4	0.00	306		0.00
3	CAT	CAT 980G Loader	2001	300	4	0.008	0.36	1,772	2	0.00	1,531		0.00
4	GENIE	S60 4X2 BOOM LIFT	1999	48	4	0.008	0.31	133	0	0.00	16		0.00
5	BOBCAT	250 WELDER	2008	12.5	4	0.008	0.45	67	0	0.00	3		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	4	0	0.38	1,772	0	0.00	0		0.00
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	4	0.008	0.38	224	4	0.00	309		0.00
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	4	0.008	0.37	1,772	1	0.00	350		0.00
9	GENIE	10,000 LB LIFT	2007	82	4	0.008	0.2	1,772	1	0.00	232		0.00
10	KOMATSU	ROCK TRUCK	2010	385	4	0	0.38	1,772	0	0.00	0		0.00
11	TEREX	300LC-2 EXCAVATOR	2007	197	4	0.008	0.38	224	2	0.00	134		0.00
12	CAT	980H WHEEL LOADER	2007	355	4	0.008	0.36	1,772	3	0.00	1,812		0.00
13	CAT	980M WHEEL LOADER	2015	378	4	0.008	0.36	1,772	3	0.00	1,929		0.00
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	0.008	0.38	399	1	0.00	212		0.00
15	BOBCAT	SKID STEER S570	2017	66.8	4	0.008	0.37	1,772	1	0.00	350		0.00
16	ATLAS PM2.5PPM2.5	FLEXIROC T50 ROCK DRILL	2011	417	4I	0.008	0.5	1,772	3	0.00	2,955		0.00
17	GROVE	RT74 CRANE	1988	200	4	0.008	0.29	0	2	0.00	0		0.00
				4272.1		**0.12**		**17,415**	**28**	**0.01**	**10,349**		**0.01**
Fleet Average for ARB Offroad Fleet Reg PM2.5mpliance									0.01				

	Annual PM2.5 Emissions (grams/year)	Annual PM2.5 Emissions (pounds/year)	Daily PM2.5 Emissions (pounds/day)	Annual Average PM2.5 Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	5,383	11.86	0.05	2.769E-04
Equipment Operating at the haul truck location (highliighted in blue)	4,966	10.94	0.05	2.555E-04
Total (based on increased number of project hours)	10,349	22.80	0.10	5.324E-04
		0.0114 tons/year		

Factor to PM2.5nvert Annual Daily Average to Maxximum DailyEmiss	1.2	
Hours of Operation	9	hours/day

	Maximum Daily PM2.5 Emissions (pounds/day)	Maximum Daily PM2.5 Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	0.06	8.860E-04
Equipment Operating at the haul truck location (highliighted in blue)	0.06	8.175E-04
Total (based on increased number of project hours)	0.12	1.704E-03

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Year: **2025**
Pollutant: **PM2.5 Ex**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	7	2	1	2	7	14.0	140.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.

Factor to Convert Annual Daily Average Emissions' to Maximum Daily Emi 1.2

Daily Operations 9 hours

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 0.0482 g/mi in Tulare County for 2025 (average from 5 to 15 mph)

Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)

Daily Average Emissions	6.75	grams/day
Daily Average Emissions	0.01	pounds/day
Annual Average Emissions	7.818E-05	grams/sec

Daily Maximum Onsite Exhaust Emissions

Maximum Daily Exhaust Emissions	8.1	grams/day
Maximum Daily Exhaust Emissions	0.018	pounds/day
Maximum Daily Exhaust Emissions	2.085E-04	grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)

Emission Factor g/mile T7 Construction 0.0107 g/hr in Tulare County for 2025

Daily Average Emissions	0.043	grams/day
DailyAverage Emissions	0.000	pounds/day
Annual Average Emissions	4.941E-07	grams/sec

averaged over all hours of the year

Average Daily Onsite Idle Emissions

Maximum Daily Idling Emissions	0.05	grams/day
Maximum Daily Idling Emissions	0.00	pounds/day
Maximum Daily Idling Emissions	1.318E-06	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	2.107E-07	grams/sec
Travel emissions along the Onroad onsite haul truck route	2.834E-07	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 4.941E-07 grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad truck route and 1 truck covers the onroad haul truck toure

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Exhaust Emissions Allocated along each route

Travel emissions along the offroad haul truck route	8.889E-05	grams/sec
Travel emissions along the Onroad onsite haul truck rou	1.196E-04	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 1.318E-06 grams/sec

Emission Total	**0.015**	**pounds/day**
	0.002	**tons/year**

Deer Creek Mine Expansion - Tulare County

2025 Project Development @ 700,000 tons/year

Average Daily Onsite Emission Estimates for Work Vehicles

Year: 2025
Pollutant: M2.5 Ex

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***2.8***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Factor to Convert Annual Average Daily Emissions to Maximum Daily Emissions 1.2

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	11.2	miles/day
EMFAC2017 Exhaust Emission Factor	0.095	g/mile for Tulare County in 2025
Averge Daily Exhaust Emissions	1.07	g/day
Averge Daily Exhaust Emissions	0.002	pounds/day
Annual Average Exhaust Emissions	1.235E-05	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.76	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	5.32	grams/day
Average Daily Idling Emissions	0.012	pounds/day
Annual Average Idling Emissoins	6.157E-05	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT1

Maximum Daily Exhaust Emissions	1.280	grams/day
Maximum Daily Exhaust Emissions	0.003	pounds/day
Maximum Daily Exhaust Emissions	3.952E-05	grams/sec
Maximum Daily Idling Emissions	6.383	grams/day
Maximum Daily Idling Emissions	0.014	pounds/day
Maximum Daily Idling Emissions	1.970E-04	grams/sec

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	5.6	miles/day
EMFAC2017 Exhaust Emission Factor	0.095	g/mile for Tulare County in 2025
Averge Daily Exhaust Emissions	0.53	g/day
Averge Daily Exhaust Emissions	0.001	pounds/day
Annual Average Exhaust Emissions	6.154E-06	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.77	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	2.69	grams/day
Average Daily Idling Emissions	0.006	pounds/day
Annual Average Idling Emissoins	3.114E-05	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT2

Maximum Daily Exhaust Emissions	0.638	grams/day
Maximum Daily Exhaust Emissions	0.0014	pounds/day
Maximum Daily Exhaust Emissions	1.969E-05	grams/sec
Maximum Daily Idling Emissions	3.228	grams/day
Maximum Daily Idling Emissions	0.0071	pounds/day
Maximum Daily Idling Emissions	9.963E-05	grams/sec

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	9.252E-06	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	9.252E-06	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area and	4.635E-05	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	4.635E-05	grams/sec

Emission Total	**0.021**	**pounds/day**
	0.002381	**tons/year**

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Maximum Daily Exhaust Emissons along onroad-offroad haul truck route:	2.961E-05	grams/sec
Maximum Daily Exhaust Emissons along offroad haul truck route:	2.961E-05	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area anc	1.483E-04	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	1.483E-04	grams/sec

EMFAC2017 (v1.0.2) Emission Rates
Region Type: PM2.5unty
Region: TULARE
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM2.5_Total	PM2.5 EXH	PM2.5 TW	PM2.5 BW
TULARE	2025	T7 tractor	Aggregated	5	DSL	0.05	0.0115	0.0090	0.0265
TULARE	2025	T7 tractor	Aggregated	10	DSL	0.05	0.0101	0.0090	0.0265
TULARE	2025	T7 tractor	Aggregated	15	DSL	0.04	0.0080	0.0090	0.0265
TULARE	2025	T7 tractor	Aggregated	20	DSL	0.04	0.0068	0.0090	0.0265
TULARE	2025	T7 tractor	Aggregated	25	DSL	0.04	0.0065	0.0090	0.0265

Average Emission Factors (g/mile) 5 mph to 15 mph

	PM2.5_RUNEX
T7 tractor	0.0453

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	PM2.5 IDLEX emission_rate
2025	Annual	Tulare (SJV)	T7 tractor	Dsl	PM2.5	0.0096

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM2.5_TOTAL	PM2.5 RUNEX	PM2.5 TW	PM2.5 BW
TULARE	2025	7 single PM2.5nstructic	Aggregated	5	DSL	0.051	0.0154	0.009	0.026
TULARE	2025	7 single PM2.5nstructic	Aggregated	10	DSL	0.049	0.0132	0.009	0.026
TULARE	2025	7 single PM2.5nstructic	Aggregated	15	DSL	0.045	0.0098	0.009	0.026

Average (5-15mph)
M2.5_RUNEX
0.048

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	PM2.5_IDLEX
2025	Annual	Tulare (SJV)	7 Single PM2.5nstructio	Dsl	IDLEX	0.011

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM2.5_TOTAL	PM2.5 RUNEX	PM2.5 TW	PM2.5 BW
TULARE	2025	LHD1	Aggregated	5	DSL	0.113	0.0773	0.003	0.033
TULARE	2025	LHD1	Aggregated	10	DSL	0.093	0.0574	0.003	0.033
TULARE	2025	LHD1	Aggregated	15	DSL	0.080	0.0438	0.003	0.033
					Average 5-15mpl	0.095			
TULARE	2025	LHD2	Aggregated	5	DSL	0.109	0.068	0.003	0.038
TULARE	2025	LHD2	Aggregated	10	DSL	0.093	0.052	0.003	0.038
TULARE	2025	LHD2	Aggregated	15	DSL	0.082	0.041	0.003	0.038
					Average 5-15mpl	0.095			

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	PM2.5_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	0.76
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	0.77

Deer Creek Mine Expansion - Tulare Cour 2025 Project Development @ 700,000 tons/year
Summary of Annual Average Emissions

Year: 2025

Pollutant: PM2.5 Fugitive Dust

Emission Factor to Convert Annunal Daily Average Emissions to Maximum DailyEmissions 1.2

Source	Annual Ave pounds/day	Total tons/year	Max Daily (pounds/day)
OnRoad Onsite Haul Trucks - Fugitive Dust Emissions	2.37	0.27	2.85
Offroad Trucks - Fugitive Dust Emissions	4.02	0.45	4.83
Storage Piles - Fugitive Dust	0.61	0.07	0.73
Wind Erosion - Fugitive Dust	0.68	0.08	0.82
Truck Loading - Fugitive Dust	0.18	0.02	0.21
Blasting		0.00	0.00
Permitted Sources	5.76	0.65	6.91
Total	13.62	1.54	16.34

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

AERMOD Emission Sources

Year: 2025
Pollutant: PM2.5 Fugitive Dust
Annual Average Emissions

Source ID	Source Component	Average Daily Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Tyle
EOnOnHaul	Onroad, Onsite Haul Trucks, Unpaved Road Dust	1.25E-02	Line-Volume	3.993E-02	Line-Volume
EOffHaul	Offroad Haul Trucks, Unpaved Road Dust	2.114E-02	Line Volume	6.763E-02	Line Volume
Spiles	Storage Piles Fugitive Dust	1.128E-06	Circular Area	3.250E-06	Circular Area
Permit1	Fugitive Dust at the Offroad Truck Unloading Area	1.513E-02	Point	9.683E-02	Point
Permit2	Fugitive Dust at the Excavation Area (Truck loading, boring, blasting, and wind erosion)	1.947E-02	Point	1.100E-01	Point
Matload	Loading of Onroad Haul Trucks	4.626E-04	Point	1.480E-03	Point

Deer Creek Mine Expansion - Tulare County 2025 Project Development @

Year: 2025
Pollutant: **PM2.5 Fugitive Dust**

Annual Average Onsite Project Incremental Unpaved Road Dust Emissions from On-Road

Average Daily Haul Trucks	124	trucks/day
Onsite Round trip Distance	0.7	miles
Average Vehicle Speed	5	mph
Operational Day	9	hours

Emission Factor: $E = k\,(s/12)^a (W/3)^b$

	k (constant PM2.5)	s (% silt content)	W (vehicle Weight tons)	PM2.5 EF (lbs/vmt)
Loaded Trucks 40 tons	0.15	5	40	0.2188
Unloaded Trucks 15 tons	0.15	5	15	0.1407
Average				0.1094

Annual VMT	19530	miles/year	
Annual PM2.5 Fdust Emissions	2137.0	pounds/year	
(Unmitigated)	1.1	tons/year	
Annual PM2.5 FDust Emissions	534.2	pounds/year	(75% dust mitigation required)
(Mitigated)	0.3	tons/year	
	2.4	pounds/day	

Average PM2.5 Fdust Emissions	**1.248E-02**	**grams/sec averaged over all hours of the year**

Conversion of Average Daily Emissions to Maximum Daily Emissions: 1.2

Maximum Daily Number of Truck	149	trucks/day
Max Daily VMT	104.16	miles/day
Max Daily PM2.5 FDUST	11.4	pounds/day (Unmitigated)
Max Daily PM2.5 FDUST	2.85	pounds/day (mitigated) 75% dust mitigation required

Max Daily PM2.5 FDUST	**3.993E-02**	**grams/sec**

Emission Total	**2.4**	**pounds/day**
	0.2671	**tons/year**

700,000 tons/year

Haul Trucks

Deer Creek Mine Expansion - Tulare Count 2025 Project Development @ 700,(

Year: 2025
Pollutant: **PM2.5 Fugitive Dust**

Annual Average Onsite Project Incremental Exhaust Emissions

Days of Operation	225	days/year		
Number of Trucks	2	trucks		
Average Truck Speed	5	mph		
Increased Hours of Operation	6.9	hours/day		
Trip Distance	830	meters or	0.52	miles
Travel Time	0.103	hrs/trip		
Daily Trips	67	trips/day/truck		
	134	trips/day for 2 trucks		
Facility Operations	9	hours/day		

Emission Factor: $E = k\,(s/12)^a (W/3)^b$

	k (constant PM2.5)	s (% silt content)	W (vehicle Weight tons)	PM2.5 EF (lbs/vmt)
Loaded Trucks 80 tons	0.15	5	80	0.2989
Unloaded Trucks 40 tons	0.15	5	40	0.2188
Average				0.1495

Annual VMT	15525	miles/year
Annual PM2.5 Fdust Emissions	2321	pounds/year
(Unmitigated)	1.2	tons/year
Annual PM2.5 FDust Emissions	905.0	pounds/year
(Mitigated)	0.5	tons/year
	4.0	pounds/day

Average PM2.5 Fdust Emissions	**2.114E-02**	**grams/sec averaged over all hours of the yea**

Factor to convert average emssions to maximum emissions: **1.2**

Maximum Daily VMT	83	miles/day
Maximun Daily PM2.5 FDUST	12.38	pounds/day (unmitigated)
Maximun Daily PM2.5 FDUST	0.17	grams/sec (unmitigated)
Maximum Daily PM10 FDUST	4.83	pounds/day (mitigated) (75% dust mitigatoin re

Maximun Daily PM2.5 FDUST	**6.763E-02**	**grams/sec (mitgated)**

Emission Total	**4.0**	**pounds/day**
	0.453	**tons/year**

)00 tons/year

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Deer Creek Mine Expansion - Tulare County 2025 Project Development @

Storage Piles

	PM2.5 EF (lb/acre/day)	Control Efficiency	Pile Size (acres)	PM2.5 FDust lb/hour	lb/day
Existing Storage Piles	3.9	0.39	0.8	0.12	1.22
Storage Piles with Project	3.9	0.39	1.2	0.18	1.83
Increase From Project	3.9	0.39	0.4	0.06	0.61

Pile Size (Increase from Project) 0.4 acres or 2833 m2

Average PM2.5 Fdust Increase 0.61 pounds/day (mitigated)
Average PM2.5 Fdust Increase 0.00320 grams/sec averaged over all hours of the year
Average PM10 Fdust Increase 1.128E-06 gram/m2-sec area source emission rate

Factor to convert average emissions to maximum emisisons 1.2

Maximum Daily PM2.5 Fdust Increa 3.250E-06 grams/m2-sec

Emission Total 0.61 pounds/day
0.0684 tons/year

US EPA AP-42, Section 11.9, Western Surface Coal Mining, Table 11.9-1: http://www.epa.gov/ttnchie1/ap42/ch11/final
The emission factor is 0.72*u for TSP; the "u" refers to the wind speed, which is an average of 4.5 knots (2.3 meters per

TSP (<=30 mm) = 0.72 x u lb TSP/acre-hr: Where u (wind speed) = 5.2 mph
0.72 x 5.2 = 3.74 lb TSP/acre-hr
PM10 = TSP x SF: Where SF (Scaling Factor) = 0.19
PM10 = 3.74 x 0.19 = 0.79 lb PM10/acre-hr x 10 operating hrs/day = 7.1 lb PM10/acre-day
PM2.5 = TSP x SF: Where SF (Scaling Factor) = 0.105
PM2.5 = 3.74 x 0.105 = 0.39 lb PM2.5/acre-hr x 10 operating hrs/day = 3.9 lb PM2.5/acre-day
A scaling factor for active storage pile PM10 was not provided in AP-42 Table 11.9-1. Therefore, a scaling factor was de
The scaling factor for PM10 for bulldozing overburden (0.75 x PM15) was used as a basis. Since the scaling factor for b
to the corresponding PM15 emission factor and since there is no data provided for PM15 for the active storage pile er
for the active storage piles using the ratio of PM15 to TSP provided for bulldozer overburden as follows
Bulldozing overburden TSP = 5.7 (s)1.2 / M1.3 lb/hr, where s (silt content) = 6.9%, and M (moisture content) = 7.9%.
Bulldozing overburden TSP = 5.7 x 6.91.2 / 7.91.3 = 3.94 lb/hr
Bulldozing overburden PM15 = 1.0 (s)1.5 / M1.4 lb/hr
Bulldozing overburden PM15 = 1.0 x 6.91.5 / 7.91.4 = 1.00 lb/hr
The ratio of PM15 to TSP = 1.00/3.94 = 0.25
Applying the PM15 to TSP ratio and PM10 scaling factor based on bulldozing overburden, a scaling factor for the active
The scaling factor for PM2.5 is 0.105, as defined in AP-42 Table 11.9-1, dated July 1998, and is applied to the TSP equa
Assumes water spray for dust suppression at three per day and 61% emission reduction

ᵭ 700,000 tons/year

tons/year

0.14
0.21
0.07

l/c11s09.pdf
second or 5.2 miles per hour)

erived as follows:
ulldozing overburden is to be applied
missions, a PM15 value was estimated

e storage pile PM10 is estimated as 0.25 x 0.75 = 0.19.
ation as noted in the referenced table

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Wind Erosion

		Emission Factor (tons/acre/year		PM2.5 Emissions		
	Area (acres)	TSP	PM2.5 Emissions	lbs/hour	lb/day	tons/year
Existing	0.39	0.38	0.01178	0.0010	0.0252	0.0046
With Project	0.73	0.38	0.01178	0.0020	0.0471	0.0086
Increase from Project	0.34	0.38	0.01178	0.0009	0.0219	0.0040

Exposed Area 0.34 acres or 1376 m2

Average PM2.5 Fdust Increase 1.153E-04 grams/sec averaged over all hours of the year

Factor to Convert Averager Emissions to Maximum Emssions 1.2

Maximum PM2.5 Fdust Increase 5.766E-06 grams/sec

Exposed area is assumed to be the proposed aggregate processing area, but not the drilling and blasting area consisting of rock surface.
Exposed areas are assumed to be the areas of the pit that are exposed, where topsoils are removed and drilling and blasting occur, as well as berms and benchs prior to stabilization.
Topsoils are removed and drilling and blasting occur, as well as berms and benchs prior to stablization. Since it is assumed that 17,000 square feet (0.39 acres) are disturbed for each blast and there are a maximum of 45 blasts per year, then 0.39 acres is assumed to be disturbed at any given time. Areas that are not disturbed consist of hard rock and have negligible potential for wind erosion.
Emission factor for PM2.5 from US EPA AP-42, Table 11.9-4 for total suspeded particulates (TSP). It is assumed that PM2.5 is 60% of TSP and PM2.5 is 3.1%, according to information in Table 11.9-2 for grading.
It is assumed that the daily and hourly estimates are over the entire year
The increase in area exposed is assumed to be proportional to the increase in annual throughput

Truck Loading to Off-Road 40 ton/load Haul Trucks

	Material Loaded	Emission Factors (lbs/ton) PM2.5	PM2.5 Emisions lbs/hour	lb/day	tons/year
Loading from Existing Ops	800,000	0.0000283	0.01	0.10	0.01
Loading with Project	1,500,000	0.0000283	0.02	0.19	0.02
Increase from Project	**700,000**	**0.0000283**	**0.01**	**0.09**	**0.01**

	PM2.5 EF (lb/acre/day)	Control Efficiency	Pile Size (acres)	PM2.5 Emissions lb/hour	lb/day	tons/year
Existing Storage Piles	3.9	0.39	0.8	0.12	1.22	0.14
Storage Piles with Project	3.9	0.39	1.2	0.18	1.83	0.21
Increase From Project	3.9	0.39	0.4	0.06	0.61	0.07

		Emissions Factors (tons/acre/year)		PM2.5 Emissions		
	Area (acres)	TSP	PM2.5	lbs/hour	lb/day	tons/year
Existing	0.39	0.38	0.01178	0.0010	0.0252	0.0046
With Project	0.73	0.38	0.01178	0.0020	0.0471	0.0086
Increase from Project	0.34	0.38	0.01178	0.0009	0.0219	0.0040

Total Fugitive Dust

	PM2.5	PM2.5 lb/day	Average Emission (grams/sec)
Existing	0.15	1.37	
With Project	0.24	2.06	
Increase from Project	0.08	0.69	**3.643E-03**

Factor to convert average emisions to maximmum emissions **1.20**

Maximum Daily Emissions 1.166E-02 grams/sec

Emission Total 0.7403 pounds/day
0.083 tons/year

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Truck Loading Dust

Truck Loading to On-Road 25 ton/load Haul Trucks

	Material Loaded (tons/year)	Emission Factors PM2.5	PM2.5 Emisions lbs/hour	lb/day	tons/year
Loading from Existing Ops	800,000	0.0000283	0.01	0.10	0.01
Loading with Project	1,500,000	0.0000283	0.02	0.19	0.02
Increase from Project	**700,000**	**0.0000283**	**0.01**	**0.09**	**0.01**

OPerational Hours 9 hours/day

Average PM2.5 FDust Increase 4.626E-04 grams/sec averaged over all hours of the year

Factor to convert average emissions to maximum emissions 1.2

Maximum Daily PM2.5 Emissions 1.480E-03 grams/sec

Truck Loading to Off-Road 40 ton/load Haul Trucks

	Material Loaded (tons/year)	Emission Factors PM2.5	PM2.5 Emisions lbs/hour	lb/day	tons/year
Loading from Existing Ops	800,000	0.0000283	0.01	0.10	0.01
Loading with Project	1,500,000	0.0000283	0.02	0.19	0.02
Increase from Project	**700,000**	**0.0000283**	**0.01**	**0.09**	**0.01**

Average PM2.5 FDust Increase 4.626E-04 grams/sec averaged over all hours of the year

Factor to convert average emissions to maximum emissions 1.2

Maximum Daily Emssions 1.480E-03 grams/sec

Emission Total 0.18 pounds/day
0.01981 tons/year

The PM10 emission factor is 0.0000460 lb/ton and the emission factor for PM2.5 is 0.0000130 lb/ton. The ratio of PM2.5 to PM10 is 0.0000130/0.0000460 = 0.283.
Since the PM10 emission factor is estimated to be 0.00010 lb/ton, the emission factor for PM2.5 is estimated to be 0.0001 x 0.283 lb/ton
Emission factor for PM10 is from EPA AP-42, Table 11.19.2-2 (Emission Factors for Crushed Stone Processing Operations). Website: http://www.epa.gov/ttnchie1/ap42/ch11/final/c11s1902.pdf

based on AP-42 11.19.2, Final Section, updated August 2004. The PM10 emission factor 0.000046 lb/ton and the emission factor for PM2.5 to PM10 is 0.000013/0.000046 = 0.283.
Since the PM10 emission factor is estimated to be 0.0001 lb/ton, the emission factor for PM2.5 is estimated to be 0.0001 x 0.283 = 0.0000283 lb/ton
- Assumes 225 days/year and 9 hours/day

Deer Creek Mine Expansion - Tulare Cour 2025 Project Development @ 700,

Permitted Equipment

Operational Hours 9 hours/day

Emissions from Permitted Equipment

	Throughput (tons/year)	PM2.5 dust (lbs/day)	PM2.5 dust (tons/year)
Existing Baseline Emissions	800,000	6.58	0.74
Permit Limit	1,500,000	12.34	1.39
Increase from Baseline from Project	700,000	5.76	0.65

Average PM2.5 FDust Increase	**3.03E-02**	**grams/sec averaged over all hours of the year**

Assume 1/2 Emissions Occur at the Excavation Area	**1.513E-02**	**grams/sec**
Assume 1/2 Emissions Occur at the Offroad Unloading Area	**1.513E-02**	**grams/sec**

Factor to Convert Average Emissions to Maximum Emissior **1.2**

Assume 1/2 Emissions Occur at the Excavation Area	**9.683E-02**	**grams/sec**
Assume 1/2 Emissions Occur at the Offroad Unloading Area	**9.683E-02**	**grams/sec**

Emission Total	5.759	pounds/day
	0.648	tons/year

Project currently operating at 53% of Permitted Emission Limits
With Project the facility would operate at permitted limits.
SJVAPCD Permit S-4136-3-6

Source of PM2.5 dust: 18.5 percent of PM10 emissions, according to the values for controlled tertiary crushing in from the USEPA AP-42 Section 11.19.2, Crushed Stone Processing and Pulverized Material Processing
Source of PM2.5 exhaust: CalEEMod manual (Appendix D, table 3.5) indicates PM2.5 is the same as PM10
Source of other values: San Joaquin Valley Air Pollution Control District, Authority to Construct

000 tons/year

ı Table 11.19.2-1

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	142		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	1,500,000	142	blasts/yr
Increased Blasts from Project/Yr		66	

Emission Factors

	PM10 (kg/Mg)
Wet Drilling Unfragmented Stone	0.00004

PM10 EF = 0.000014(A)^(1.5)(0.52) , where A = horizontal area in ft2 with a scaling factor for <10um of 0.52
PM2.5 EF = 0.000014(A)^(1.5)(0.03) , where A = horizontal area in ft2 with a scaling factor for <2.5um of 0.03
Source of PM2.5 drilling: 18.5 percent of PM10 emissions, according to the values for controlled tertiary crushing in Ta

PM2.5 Dust Emission Factor (lbs/blast) 0.003483266

Dust Emissions

		PM2.5 EF (lbs/blast)	PM2.5 Emissions (Lbs/day)	PM2.5 Emissions (tons/year)	
Baseline	Blasting	0.0035	0.0035	0.0001	
	Drilling	0.12	0.1200	0.0045	
	Total		**0.1235**	**0.0047**	
With Project	Blasting	0.0035	0.0035	0.0002	
	Drilling	0.12	0.1200	0.0085	
	Total		**0.1235**	**0.0088**	
Net Increase from Project	Blasting and Drilling		0.0000	0.0041	
				1.179E-04	grams/sec aver
					over entire yea

Daily rates are unchanged since the number of blasts per day would not change.

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explo
5 tons of ANFO/blast

Emission Total	**0.0041**	**tons/year**

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Deer Creek Mine Expansion - Tulare County **2025** **Project Development @ 700,000 tons/year**

Summary of Daily Emissions **ONSITE ONLY**

Year: **2025**
Pollutant: **ROG**

Source	**Annual Total tons/year**
Drilling amd Blasting	0.000
Offeoad Equipment	0.092
Water Trucks	0.006
Work Trucks -	0.011
OnRoad Onsite Haul Trucks -	0.056
Offroad Haul Trucks	0.169
Employee Commute	0.000
Unpaved Road Dust (fugitive dust)	0.000
Dust (loading, wind, storage piles, unpaved roads)	0.000
Permitted Sources	0.000
Total Project Emissions	0.334

Deer Creek Mine Expansion - Tulare County

2025 **Project Development @ 700,000 tons/year**

AERMOD Emission Sources

Year: **2025**
Pollutant: **ROG**
Annual Average Emissions

Source ID	Source Component	Annual Average Emissions Emissions (g/sec)	Source Tyle	Maximum Daily Emissions (g/sec)	Source Type
EOnOnHaul	Onroad, Onsite Haul Trucks, Exhaust	8.51E-05	Line-Volume	2.724E-04	Line Volune
	Water Trucks, Exhaust	4.67E-05		1.854E-04	
	Work Trucks.Exhaust	5.53E-05		1.770E-04	
	Total	**1.87E-04**		**6.349E-04**	
EOffHaul	Offroad Haul Trucks,Exhaust	6.076E-03	Line Volume	1.944E-02	Line Volume
	Water Trucks.Exhaust	4.669E-05		2.494E-04	
	Work Trucks,Exhaust	5.533E-05		1.770E-04	
	Total	**6.178E-03**		**1.987E-02**	
Iscale	Onroad, Onsite Haul Trucks, Idle (Scale @ Entrane/Scale@ Exit	**1.699E-03**	Point	**5.438E-03**	Point
Imaint	Maintenance Area Work Truck,Idle	1.928E-04	Point	6.170E-04	Point
	Maintenance Area Water Truck, Idle	1.095E-04		2.920E-04	
	Total	**3.023E-04**		**9.090E-04**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	8.496E-04	Point	2.719E-03	Point
	Onsite Equipment, Operations	2.077E-03		6.645E-03	
	Total	**2.926E-03**		**9.364E-03**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	9.158E-04	point	2.931E-03	Point
	Excavation Area, Work Truck, Idle	1.928E-04		6.170E-04	
	Onsite Equipment, Operations	2.209E-03		7.067E-03	
	Blasting	0.000E+00		0.000E+00	
	Total	**3.317E-03**		**1.061E-02**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**9.158E-04**	point	**2.931E-03**	Point

.

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Onroad Onsite Average Daily Haul Truck Emissions

Year: 2025
Pollutant: ROG

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	***124***	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	0.085	g/mi in Tulare County for 2025 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**7.4**	grams/day
Daily Exhaust Emissions	**0.02**	pounds/day
Annual Exhaust Emissions	**8.514E-05**	grams/sec averaged over all hours of the year

Maximum Daily Onsite Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emissions 1.2

Maximum Daily Emissions	8.83	grams/day
Maximum Daily Emissions	0.02	pounds/day
Maximum Daily Emissio	**2.724E-04**	**grams/sec**

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	124	trucks/day
EMCAC2017 Idling Emission Factor	2.368	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**220.23**	g/day
Daily Idling Emissions	**0.49**	pounds/day
Annual Idling Emissions	**2.549E-03**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Maximum Daily Onsite Idling Emissions

Maximum Daily Emissions	264.27	grams/day
Maximum DailyEmissions	0.58	grams/day
Maximum Daily Emissio	**8.157E-03**	**grams/sec**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**8.514E-05**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**8.496E-04**	**grams/sec**
Material Loading	**8.496E-04**	**grams/sec**
Weight Scale @ Exit	**8.496E-04**	**grams/sec**

Emission Total	**0.50**	**pounds/day**
	0.0564	**tons/year**

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**2.724E-04**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**2.719E-03**	**grams/sec**
Material Loading	**2.719E-03**	**grams/sec**
Weight Scale @ Exit	**2.719E-03**	**grams/sec**

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,(

Offroad Haul Truck Daily Average Daily Emissions

Year: 2025
Pollutant: **ROG** (Unmitigated)

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year		
Number of Trucks	2	trucks		
Average Truck Speed	5	mph		
Increased Hours of Operation	***6.9***	hours/day		
Trip Distance	830	meters or	0.52	miles
Travel Time	0.103	hrs/trip		
Daily Trips	67	trips/day/truck		
	134	trips/day for 2 trucks		
CalEEMod Exhaust Emission Factor	0.26	g/hp-hr (Tier 4)		
Equipment Size	385.00	hp		
Load Factor	0.38			
Work Day	9	hours/day		

Daily Average Exhaust Emissions	524.92	grams/day
Daily Average Exhaust Emissions	1.16	pounds/day
Annual Average Exhaust Emission	6.076E-03	grams/sec averaged over the entire year

Average Daily Osite Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	134	events
EMCAC2017 Idling Emission Factor	2.365	g/hr in Tulare County for 2025
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	158.25	grams/day
Daily Average Idling Emissions	0.35	pounds/day
Annual Average Idling Emissions	1.832E-03	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	6.076E-03	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	9.158E-04	grams/sec
Offload area to crusher	9.158E-04	grams/sec

Emission Total	**1.50**	**pounds/day**
	0.1693	**tons/year**

)00 tons/year

Offroad Haul Truck Maximum Daily Emissions

Maximum Daily Onsite Exhaust Emissions

Factor to Convert Average Daily Emissions to Maximum Daily Emissions	1.2	
Increased hours of Operation	8.28	hours/day

Maximum Daily Exhaust Emissions	**629.91**	**grams/day**
Maximum Daily Exhaust Emissions	**1.39**	**pounds/day**
Maximum Daily Exhaust Emissions	**1.944E-02**	**grams/sec**

Maximum Daily Onsite Idling Emissions

Maximum Daily Idling Emissions	**189.90**	**grams/day**
Maximum Daily Idling Emissions	**0.42**	**pounds/day**
Maximum Daily Idling Emissions	**5.861E-03**	**grams/sec**

Emission Allocation

Exhaust Emissions

All emissions along vehicle route: 1.944E-02 grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	2.931E-03	grams/sec
Offload area to crusher	2.931E-03	grams/sec

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	Comments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.9	0.88	197	422	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	7.9	2.80	224	944	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	7.9	7.88	1,772	3,797	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.9	0.72	133	318	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.4	0.36	67	159	Gasoline 9,500 watt continuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	7.9	2.80	224	944	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	7.9	7.88	1,772	3,797	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	7.9	7.88	1,772	3,797	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	7.9	2.80	224	944	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	7.9	7.88	1,772	3,797	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	7.9	7.88	1,772	3,797	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	2.6	2.16	399	954	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	7.9	7.88	1,772	3,797	
11	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	7.9	7.88	1,772	3,797	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	3.5	0.39	10	110	Limited Use
				4572.1			21,543					17,424	38,967	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	700,000
Increase Fraction	0.875

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	ROG g/bhp-hr	Load Factor	Increased Hours/Year	HP x ROG Factor	Weighted Avg ROG/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	4	0.06	0.44	197	18	0.00	1,559		0.00
2	HITACHI	EX700H Excavator	1991	450	4	0.06	0.38	224	27	0.00	2,298		0.00
3	CAT	CAT 980G Loader	2001	300	4	0.06	0.36	1,772	18	0.01	11,482		0.01
4	GENIE	S60 4X2 BOOM LIFT	1999	48	4	0.12	0.31	133	6	0.00	238		0.00
5	BOBCAT	250 WELDER	2008	12.5	4	0.12	0.45	67	2	0.00	45		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	4	0	0.38	1,772	0	0.00	0	#DIV/0!	0.00
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	4	0.06	0.38	224	27	0.00	2,319		0.00
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	4	0.12	0.37	1,772	8	0.01	5,255		0.01
9	GENIE	10,000 LB LIFT	2007	82	4	0.07	0.2	1,772	6	0.01	2,034		0.00
10	KOMATSU	ROCK TRUCK	2010	385	4	0	0.38	1,772	0	0.00	0	#DIV/0!	0.00
11	TEREX	300LC-2 EXCAVATOR	2007	197	4	0.06	0.38	224	12	0.00	1,006		0.00
12	CAT	980H WHEEL LOADER	2007	355	4	0.06	0.36	1,772	21	0.01	13,587		0.01
13	CAT	980M WHEEL LOADER	2015	378	4	0.06	0.36	1,772	23	0.01	14,467		0.01
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	0.06	0.38	399	11	0.00	1,593		0.00
15	BOBCAT	SKID STEER S570	2017	66.8	4	0.12	0.37	1,772	8	0.01	5,255		0.01
16	ATLAS COPCO	FLEXIROC T50 ROCK DRILL	2011	417	4I	0.06	0.5	1,772	25	0.01	22,166		0.02
17	GROVE	RT74 CRANE	1988	200	4	0.06	0.29	0	12	0.00	0		0.00
				4272.1		**1.15**		**17,415**	**223**	**0.06**	**83,304**	**#DIV/0!**	**0.07**
Fleet Average for ARB Offroad Fleet Reg Compliance									0.05		**Trucks**	**#DIV/0!**	

	Annual ROG Emissions (grams/year)	Annual ROG Emissions (pounds/year)	Daily ROG Emissions (pounds/day)	Annual Average ROG Emissions (grams/sec)	
Equipment Operating at the excavation location (highliighted in yellow)	40,370	88.92	0.40	2.077E-03	
Equipment Operating at the haul truck location (highliighted in blue)	42,934	94.57	0.42	2.209E-03	
Total (based on increased number of project hours)	83,304	183.49	0.82	4.285E-03	0.092 tons/year

Factor to Convert Annual Daily Average to Maxximum DailyEmissons	1.2	
Hours of Operation	9	hours/day

	Maximum Daily ROG Emissions (pounds/day)	Maximum Daily ROG Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	0.47	6.645E-03
Equipment Operating at the haul truck location (highliighted in blue)	0.50	7.067E-03
Total (based on increased number of project hours)	0.98	1.371E-02

Deer Creek Mine Expansion - Tulare County **2025 Project Development @ 700,000 tons/year**

Year: **2025**
Pollutant: **ROG**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	7	2	1	2	7	14.0	140.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.
Emission Factor to Convert Annual Daily Average Emissions' to Maximum Daily Emissio 1.2
Daily Operations 9 hours

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 0.1006 g/mi in Tulare County for 2025 (average from 5 to 15 mph)
Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)
Daily Average Emissions 14.09 grams/day
Daily Average Emissions 0.03 pounds/day
Annual Average Emissions 1.631E-04 grams/sec

Daily Maximum Onsite Exhaust Emissions

Maximum Daily Exhaust Emissions	16.9	grams/day
Maximum Daily Exhaust Emissions	0.037	pounds/day
Maximum Daily Exhaust Emissions	4.349E-04	grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)
Emission Factor g/mile T7 Construction 2.3651 g/hr in Tulare County for 2025
Daily Average Emissions 9.460 grams/day
DailyAverage Emissions 0.021 pounds/day
Annual Average Emissions 1.095E-04 grams/sec averaged over all hours of the year

Average Daily Onsite Idle Emissions

Maximum Daily Idling Emissions	11.35	grams/day
Maximum Daily Idling Emissions	0.03	pounds/day
Maximum Daily Idling Emissions	2.920E-04	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	4.669E-05	grams/sec
Travel emissions along the Onroad onsite haul truck route	6.281E-05	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 1.095E-04 grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad truck route and 1 truck covers the onroad haul truck toure

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Exhaust Emissions Allocated along each route

Travel emissions along the offroad haul truck route	1.854E-04	grams/sec
Travel emissions along the Onroad onsite haul truck route	2.494E-04	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions : 2.920E-04 grams/sec

Emission Total	**0.052**	**pounds/day**
	0.0058	**tons/year**

Deer Creek Mine Expansion - Tulare County **2025** **Project Development @ 700,000 tons/year**

Year:	2025
Pollutant:	ROG

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	142		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	***1,500,000***	142	blasts/yr
Increased Blasts from Project/Yr		66	

Blasting Emission Factors with ANFO	**ROG (lbs/ton)**	
	0	No emission factor provided in AP-42

Average Daily Emission Calculations

	ROG Emissions (lbs/year)	ROG Emissions (tons/Yr)	ROG Emissions (pounds/day)	Annual Average ROG Emissions (grams/sec)	Maximum Daily Emissions	
Net Increase from Project	0	0.00	0.00	0.000E+00	0	no change from the base case on a daily nbasis

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explosives)
5 tons of ANFO/blast

Emission Allocation

All blasting emissions will be represented as a point source at the excavation area.

Deer Creek Mine Expansion - Tulare County

2025 Project Development @ 700,000 tons/year

Average Daily Onsite Emission Estimates for Work Vehicles

Year: 2025
Pollutant: ROG

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***2.8***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Factor to Convert Annual Average Daily Emissions to Maximum Daily Emissions 1.2

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	11.2	miles/day
EMFAC2017 Exhaust Emission Factor	0.572	g/mile for Tlare County in 2025
Averge Daily Exhaust Emissions	6.41	g/day
Averge Daily Exhaust Emissions	0.014	pounds/day
Annual Average Exhaust Emissions	7.414E-05	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	3.17	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	22.21	grams/day
Average Daily Idling Emissions	0.049	pounds/day
Annual Average Idling Emissoins	2.571E-04	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT1

Maximum Daily Exhaust Emissions	7.687	grams/day
Maximum Daily Exhaust Emissions	0.017	pounds/day
Maximum Daily Exhaust Emissions	2.372E-04	grams/sec
Maximum Daily Idling Emissions	26.654	grams/day
Maximum Daily Idling Emissions	0.059	pounds/day
Maximum Daily Idling Emissions	8.226E-04	grams/sec

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	5.6	miles/day
EMFAC2017 Exhaust Emission Factor	0.563	g/mile for Tulare County in 2025
Averge Daily Exhaust Emissions	3.15	g/day
Averge Daily Exhaust Emissions	0.007	pounds/day
Annual Average Exhaust Emissions	3.652E-05	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	3.17	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	11.11	grams/day
Average Daily Idling Emissions	0.024	pounds/day
Annual Average Idling Emissoins	1.285E-04	g/sec averaged over the entire year

Maximum Daily Repair Truck Onsite Emissions - LHDT2

Maximum Daily Exhaust Emissions	3.786	grams/day
Maximum Daily Exhaust Emissions	0.0083	pounds/day
Maximum Daily Exhaust Emissions	1.169E-04	grams/sec
Maximum Daily Idling Emissions	13.327	grams/day
Maximum Daily Idling Emissions	0.0294	pounds/day
Maximum Daily Idling Emissions	4.113E-04	grams/sec

Emission Allocation

Exhaust Emissions
Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	5.533E-05	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	5.533E-05	grams/sec

Idling Emissions
Assunption: assume one-half of all work trucks idle at the maintenance area and 1.928E-04 grams/sec
the second half of the work vehicles idle at the haul truck excavation area 1.928E-04 grams/sec

Emission Total	**0.094**	**pounds/day**
	0.011	**tons/year**

Emission Allocation

Exhaust Emissions
Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Maximum Daily Exhaust Emissons along onroad-offroad haul truck route:	1.770E-04	grams/sec
Maximum Daily Exhaust Emissons along offroad haul truck route:	1.770E-04	grams/sec

Idling Emissions
Assunption: assume one-half of all work trucks idle at the maintenance area anc 6.170E-04 grams/sec
the second half of the work vehicles idle at the haul truck excavation area 6.170E-04 grams/sec

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: TULARE
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	ROG_RUNEX
TULARE	2025	T7 tractor	Aggregated	5	DSL	0.13
TULARE	2025	T7 tractor	Aggregated	10	DSL	0.08
TULARE	2025	T7 tractor	Aggregated	15	DSL	0.04
TULARE	2025	T7 tractor	Aggregated	20	DSL	0.03
TULARE	2025	T7 tractor	Aggregated	25	DSL	0.02

Average Emission Factors (g/mile) 5 mph to 15 mph

	ROG_RUNEX
T7 tractor	0.0847

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	ROG IDLEX emission_rate
2025	Annual	Tulare (SJV)	T7 tractor	Dsl	ROG	2.3681

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	ROG_RUNEX
TULARE	2025	T7 single construction	Aggregated	5	DSL	0.148
TULARE	2025	T7 single construction	Aggregated	10	DSL	0.099
TULARE	2025	T7 single construction	Aggregated	15	DSL	0.055

Average (5-15mph)

ROG_RUNEX
0.101

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	ROG_IDLEX
2025	Annual	Tulare (SJV)	T7 Single Construction	Dsl	IDLEX	2.365

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	ROG_RUNEX
TULARE	2025	LHD1	Aggregated	5	DSL	0.798
TULARE	2025	LHD1	Aggregated	10	DSL	0.581
TULARE	2025	LHD1	Aggregated	15	DSL	0.336
					Average 5-15mpl	0.572
TULARE	2025	LHD2	Aggregated	5	DSL	0.789
TULARE	2025	LHD2	Aggregated	10	DSL	0.579
TULARE	2025	LHD2	Aggregated	15	DSL	0.322
					Average 5-15mpl	0.563

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	ROG_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	3.17
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	3.17

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Summary of Daily Emissions

Year: **2025**
Pollutant: **DPM (as PM10 EXH)** Mitigated

Source	Annual Total tons/year
Drilling amd Blasting	0.000
Offeoad Equipment	0.011
Water Trucks	0.000
Work Trucks -	0.002
OnRoad Haul Trucks -	0.001
Offroad Haul Trucks	0.004
Employee Commute	0.000
Unpaved Road Dust (fugitive dust)	0.000
Dust (loading, wind, storage piles, unpaved roads)	0.000
Permitted Sources	0.000
Total Project Emissions	**0.019**

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

AERMOD Emission Sources

Year: **2025**
Pollutant: **DPM (as PM10 EXH)**

Source ID	Source Component	Annual Average Emissions Emissions (g/sec)	Source Tyle
EOnOnHaul	Onroad, Onsite Haul Trucks, Exhaust	1.04E-05	Line-Volume
	Water Trucks, Exhaust	2.20E-07	
	Work Trucks.Exhaust	5.85E-06	
	Total	**1.65E-05**	
EOffHaul	Offroad Haul Trucks,Exhaust	1.869E-04	Line Volume
	Water Trucks.Exhaust	2.202E-07	
	Work Trucks,Exhaust	5.851E-06	
	Total	**1.930E-04**	
EonoffHaul	Onroad, Offsite Haul Truck Emissions	**9.026E-06**	Line Volume
Iscale	Onroad, Onsite Haul Trucks, Idle	**7.232E-06**	Point
	(Scale @ Entrane/Scale@ Exit		
Imaint	Maintenance Area Work Truck,Idle	4.845E-05	Point
	Maintenance Area Water Truck, Idle	5.165E-07	
	Total	**4.896E-05**	
Imat	Loading Area, Onroad-Offroad Haul Trucks,Idle	3.616E-06	Point
	Onsite Equipment, Operations	2.769E-04	
	Total	**2.805E-04**	
Iexcav	Excavation Area, Offroad Haul Truck, Idling	4.320E-06	point
	Excavation Area, Work Truck, Idle	4.845E-05	
	Onsite Equipment, Operations	2.555E-04	
	Blasting	0.000E+00	
	Total	**3.082E-04**	
Icrush	Rock crushing offload area, Offraod Haul Truck, Idling	**4.320E-06**	point

.

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Onroad Onsite Average Daily Haul Truck Emissions

Year: 2025
Pollutant: DPM (as PM10 EXH)

Average Daily Onsite Exhaust Emissions

Average Daily Haul Trucks	***124***	trucks/day
Average Vehicle Speed	5 to 15	mph
EMFAC2017 RUNEX Emission Factor	0.010	g/mi in Tulare County for 2025 (average from 5 to 15 mph)
Days of Operation	225	days/year
Hours of Operation	9	hours/day

Round Trip Dustance	**0.7**	miles was assumed for onsite travel
Daily Exhaust Emissions	**0.9**	grams/day
Daily Exhaust Emissions	**0.002**	pounds/day
Annual Exhaust Emissions	**1.038E-05**	grams/sec averaged over all hours of the year

Average Daily Onsite Idling Emissions

Average Daily Haul Trucks	124	trucks/day
EMCAC2017 Idling Emission Factor	0.010	g/hr in Tulare County for 2020
Number of Idling Locations	3	(Scale at entry, loading area, scale at exit)
Idling Time at Location	15	minutes

Daily Idling Emissions	**0.94**	g/day
Daily Idling Emissions	**0.002**	pounds/day
Annual Idling Emissions	**1.085E-05**	averaged over all hours of the year

Idling Locations: entrance at scale, loading area, exit at scale

Average Daily Onroad Offsite Exhaust Emissions

Average Daily Haul Trucks	124	trucks/day
Offsite Round trip Distance	0.7	miles
Average Vehicle Speed	5 to 25	mph
EMFAC2017 RUNEX Emission Factor	0.009	g/mi in Tulare County for 2025 (average from 5 to 25 mph)
Days of Operation	225	days/year

Daily ExhaustEmissions	**0.8**	grams/day
Daily Exhaust Emissions	**0.0017**	pounds/day
Annual Exhaust Emissions	**9.026E-06**	averaged over all hours of the year

Emission Allocation

Onroad Onsite Exhaust Emissions

All emissions along vehicle route:	**1.038E-05**	**grams/sec**

Onroad Onsite Idling Emissions

Idling Emissions at three locations

Weight Scale @ Entrance	**3.616E-06**	**grams/sec**
Material Loading	**3.616E-06**	**grams/sec**
Weight Scale @ Exit	**3.616E-06**	**grams/sec**

Onroad Offsite Exhaust Emissions'

All emissions along vehicle route:	**9.026E-06**	**grams/sec**

Emission Total	**0.00576**	**poundss/day**
	0.000648	**tons/year**

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Offroad Haul Truck Daily Average Daily Emissions

Year: 2025
Pollutant: DPM (as PM10 EXH)

Average Daily Onsite Exhaust Emissions

Days of Operation	225	days/year		
Number of Trucks	2	trucks		
Average Truck Speed	5	mph		
Increased Hours of Operation	***6.9***	hours/day		
Trip Distance	830	meters or	0.52	miles
Travel Time	0.103	hrs/trip		
Daily Trips	67	trips/day/truck		
	134	trips/day for 2 trucks		
CalEEMod Exhaust Emission Factor	0.01	g/hp-hr (Tier 4)		
Equipment Size	385.00	hp		
Load Factor	0.38			
Work Day	9	hours/day		

Daily Average Exhaust Emissions	16.15	grams/day
Daily Average Exhaust Emissions	0.04	pounds/day
Annual Average Exhaust Emission	1.869E-04	grams/sec averaged over the entire year

Average Daily Osite Idling Emissions

Number of Haul Trucks	2	trucks
Number of Idling Events	134	events
EMCAC2017 Idling Emission Factor	0.011	g/hr in Tulare County for 2025
Number of Idling Locations	2	(Excavation area, offload area)
Idling Time at Location	15	minutes

Daily Average Idling Emissions	0.75	grams/day
Daily Average Idling Emissions	0.00	pounds/day
Annual Average Idling Emissions	8.640E-06	averaged over all hours of the year

Emission Allocation

Exhaust Emissions

All emissions along vehicle route:	1.869E-04	grams/sec

Idling Emissions

Idling at 2 locations		
Excavation Area while loading	4.320E-06	grams/sec
Offload area to crusher	4.320E-06	grams/sec

Emission Total	**0.04**	**pounds/day**
	0.00419	**tons/year**

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Onsite Mobile Equipment

No.	Make	Equipment	Model Year	HP	Emission Tier	Current Hours/Day	Current Hours/Yr	Adj Hours for CalEEMod	Days/Yr	Increased Hours/Day	Adj Hours for CalEEMod	Increase Hours/Year	Total Hours With Project/Y	DPMmments
1	CAT	D8N TRACTOR	1993	300	0	1	225		225	0.9	0.88	197	422	Limited Use
2	HITACHI	EX700H Excavator	1991	450	0	9	720	3.20	80	7.9	2.80	224	944	Limited Use
3	CAT	CAT 980G Loader	2001	300	2	9	2,025		225	7.9	7.88	1,772	3,797	
4	GENIE	S60 4X2 BOOM LIFT	1999	48	2	1	185	0.82	185	0.9	0.72	133	318	Limited Use
5	BOBCAT	250 WELDER	2008	12.5	3	0.5	93	0.41	185	0.4	0.36	67	159	Gasoline 9,500 watt DPMntinuous
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	2	9	720	3.20	80	7.9	2.80	224	944	
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	2	9	2,025		225	7.9	7.88	1,772	3,797	
9	GENIE	10,000 LB LIFT	2007	82	2	9	2,025		225	7.9	7.88	1,772	3,797	Limited Use
10	KOMATSU	ROCK TRUCK	2010	385	3	9	2,025		225	7.9	7.88	1,772	3,797	
11	TEREX	300LC-2 EXCAVATOR	2007	197	3	9	720	3.20	80	7.9	2.80	224	944	
12	CAT	980H WHEEL LOADER	2007	355	3	9	2,025		225	7.9	7.88	1,772	3,797	
13	CAT	980M WHEEL LOADER	2015	378	4	9	2,025		225	7.9	7.88	1,772	3,797	
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	3	555	2.47	185	2.6	2.16	399	954	
10	BOBCAT	SKID STEER S570	2017	66.8	4	9	2,025		225	7.9	7.88	1,772	3,797	
11	ATLAS DPMPDPM	FLEXIROC T50 ROCK DRILL	2011	417	4I	9	2,025		225	7.9	7.88	1,772	3,797	
17	CAT	980G LOADER	1998	300	1	0	0		0	0.0		0	0	Not in use, parted out
18	GROVE	RT74 CRANE	1988	200	0	4	100	0.44	25	3.5	0.39	10	110	Limited Use
				4572.1			21,543					17,424	38,967	

Baseline Throughput

	Tons/Year
Baseline Use	800,000
Increased Use	700,000
Increase Fraction	0.875

9hr/day	Daily Use Loaders, Skid Steer, Forklifts, Bore Rig, Offhighway Trucks
4 mos per year	Excavators
100 hr per year, 4 hrs per day	Cranes
300 hrs/year or less	Crawler Tractor

Current Equipment Fleet

	Make	Equipment	Model Year	HP	Emission Tier	DPM g/bhp-hr	Load Factor	Increased Hours/Year	HP x DPM Factor	Weighted Avg DPM/bhp-hr	Emissions (grams/year)	Emissions Tons/Year	Weighted Avg Based on Emissions
1	CAT	D8N TRACTOR	1993	300	4	0.008	0.44	197	2	0.00	208		0.00
2	HITACHI	EX700H Excavator	1991	450	4	0.008	0.38	224	4	0.00	306		0.00
3	CAT	CAT 980G Loader	2001	300	4	0.008	0.36	1,772	2	0.00	1,531		0.00
4	GENIE	S60 4X2 BOOM LIFT	1999	48	4	0.008	0.31	133	0	0.00	16		0.00
5	BOBCAT	250 WELDER	2008	12.5	4	0.008	0.45	67	0	0.00	3		0.00
6	KOMATSU	HD325-7 OFF ROAD END DUMP TRUC	2007	385	4	0	0.38	1,772	0	0.00	0		0.00
7	HITACHI	ZX800 HYDRAULIC EXCAVATOR	2005	454	4	0.008	0.38	224	4	0.00	309		0.00
8	BOBCAT	S220 SKID STEER LOADER	2006	66.8	4	0.008	0.37	1,772	1	0.00	350		0.00
9	GENIE	10,000 LB LIFT	2007	82	4	0.008	0.2	1,772	1	0.00	232		0.00
10	KOMATSU	ROCK TRUCK	2010	385	4	0	0.38	1,772	0	0.00	0		0.00
11	TEREX	300LC-2 EXCAVATOR	2007	197	4	0.008	0.38	224	2	0.00	134		0.00
12	CAT	980H WHEEL LOADER	2007	355	4	0.008	0.36	1,772	3	0.00	1,812		0.00
13	CAT	980M WHEEL LOADER	2015	378	4	0.008	0.36	1,772	3	0.00	1,929		0.00
14	JOHN Deere	2010GLC EXCAVATOR	2012	175	4I	0.008	0.38	399	1	0.00	212		0.00
15	BOBCAT	SKID STEER S570	2017	66.8	4	0.008	0.37	1,772	1	0.00	350		0.00
16	ATLAS DPMPDPM	FLEXIROC T50 ROCK DRILL	2011	417	4I	0.008	0.5	1,772	3	0.00	2,955		0.00
17	GROVE	RT74 CRANE	1988	200	4	0.008	0.29	0	2	0.00	0		0.00
				4272.1		**0.12**		**17,415**	**28**	**0.01**	**10,349**		**0.01**
Fleet Average for ARB Offroad Fleet Reg Commpliance									0.01				

	Annual DPM Emissions (grams/year)	Annual DPM Emission (pounds/year)	Daily DPM Emissions (pounds/day)	Annual Average DPM Emissions (grams/sec)
Equipment Operating at the excavation location (highliighted in yellow)	5,383	11.86	0.05	2.769E-04
Equipment Operating at the haul truck location (highliighted in blue)	4,966	10.94	0.05	2.555E-04
Total (based on increased number of project hours)	10,349	22.80	0.10	5.324E-04
		0.011	**tons/year**	

Hours of Operation 9 hours/day

Deer Creek Mine Expansion - Tulare County 2025 Project Development @ 700,000 tons/year

Year: **2025**
Pollutant: **DPM (as PM10 EXH)**

Estimate ofDaily Emissions From Water Trucks

	Hours/Day	No. of Trucks	Idling Hrs/Day	Idle Hrs/Day 2 trucks	Run Hrs/day	Run Hours per Day 2 trucks	Miles per Day
Project Operation	7	2	1	2	7	14.0	140.0

Increase in use assumed to match average hours/day of facility operation.
Idling includes time used for watering of storage piles and water filling activities
Existing Baseline is based on project operating at 80 percent of current permit limit.

Daily Operations 9 hours

Average Annual Daily Onsite Exhaust Emissions

Emission Factor g/mile T7 Construction 0.0134 g/mi in Tulare County for 2025 (average from 5 to 15 mph)
Water Trucks Lbs/Day - Exhaust Emissions (for 2 trucks)
Daily Average Emissions 1.87 grams/day
Daily Average Emissions 0.004 pounds/day
Annual Average Emissions 2.165E-05 grams/sec

Average Daily Onsite Idle Emissions

Water Trucks Lbs/Day - Idling Emissions (for 2 trucks)
Emission Factor g/mile T7 Construction 0.0112 g/hr in Tulare County for 2025
Daily Average Emissions 0.045 grams/day
DailyAverage Emissions 0.0001 pounds/day
Annual Average Emissions 5.165E-07 grams/sec averaged over all hours of the year

Emission Allocation

Exhaust Emissions
Assunption: assume 1 truck covers the area along the offroad haul truck route and the 1 truck covers the onroad-onsite hault truck route

Travel distance along the offroad haul truck route	0.52	miles
Travel Distance along the Onroad onsite haul truck route	0.70	miles

Emissions Allocated along each route

Travel emissions along the offroad haul truck route	2.202E-07	grams/sec
Travel emissions along the Onroad onsite haul truck route	2.963E-07	grams/sec

Idling Emissions
Assumption: 1 idling locateion at the maintenance building

Emissions :	5.165E-07	grams/sec

Emission Total	**0.0042**	**pounds/day**
	0.000475	

Deer Creek Mine Expansion - Tulare County

2025 **Project Development @ 700,000 tons/year**

Year:	2025
Pollutant:	DPM (as PM10 EXH)

Blasting Emissions Calculations

Modeling Assumptions

Blasting Charge	ANFO	Ammonium Nitrate and Fuel Oil	
Tons ANFO/Blast	5		
Holes/Blast	16		
Hole Depth in Feet	40		
Existing Permitted Blasting (year)	90	10,556	tons/blast
Max Blasts/Day	1		
Area per Blast (ft2)	17,000		
Increased Blasts with Project/(yr	142		
Permitted Throughput Tons/Year	950,000		
Baseline Throughput Tons/year	800,000	76	blasts/year
Throughput with Project (tons/year)	***1,500,000***	142	blasts/yr
Increased Blasts from Project/Yr		66	

Blasting Emission Factors with ANFO	**DPM (lbs/ton)**
	0

Average Daily Emission Calculations

	DPM Emissions (lbs/year)	**DPM Emissions (tons/Yr)**	**DPM Emissions (pounds/day)**	**Annual Average DPM Emissions (grams/sec)**
Net Increase from Project	0	**0.00**	0.00	0.000E+00

Source of emission factors (EF): US EPA AP-42, Section 13.3, Table 13.3-1 (Emission Factors for Detonation of Explosives)
5 tons of ANFO/blast

Emission Allocation

All blasting emissions will be represented as a point source at the excavation area.

Deer Creek Mine Expansion - Tulare County

2025 Project Development @ 700,000 tons/year

Average Daily Onsite Emission Estimates for Work Vehicles

Year: **2025**
Pollutant: **DPM (as PM10 EXH**

Onsite Work Vehicles (Assumed to be DSL)

	GVWR	Class	Number
· GMC 2500 Pickup	10,000	LHD1	2
· Fleetwood Mechanic's Truck	14,000	LHD2	2
· Ford F-250	10,000	LHD1	2

Repair Trucks	Project Increase	
Repairs Per Truck Per Day	3.5	
Round Trips per Two Trucks per day	14	
Trip Distance (one way)	0.4	
Average RT Distance per Trip	0.8	
Miles per day per truck	***2.8***	
Miles per day for 2 trucks	5.6	
Miles per year (225 days/year)	1260	
Hours of Operation	9	hours/day

Average Daily Repair Truck Onsite Emissions - LHDT1

Exhaust Emissions

Number of LHDT1s	4	
Travel Distance	11.2	miles/day
EMFAC2017 Exhaust Emission Factor	0.062	g/mile for Tulare County in 2025
Averge Daily Exhaust Emissions	0.70	g/day
Averge Daily Exhaust Emissions	0.002	pounds/day
Annual Average Exhaust Emissions	8.063E-06	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.79	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	28	one at end of each trip
Average Daily Idling Emissions	5.56	grams/day
Average Daily Idling Emissions	0.012	pounds/day
Annual Average Idling Emissoins	6.435E-05	g/sec averaged over the entire year

Average Daily Repair Truck Onsite Emissions - LHDT2

Exhaust Emissions

Number of LHDT2s	2	
Travel Distance	5.6	miles/day
EMFAC2017 Exhaust Emission Factor	0.056	g/mile for Tulare County in 2025
Averge Daily Exhaust Emissions	0.31	g/day
Averge Daily Exhaust Emissions	0.001	pounds/day
Annual Average Exhaust Emissions	3.639E-06	g/sec averaged over the entire year

Idling Emissions

EMFAC2017 Idling Emission Factor	0.80	g/hr for Tulare County in 2025
Idling Time	15	minutes
Idling Events	14	one at end of each trip
Average Daily Idling Emissions	2.81	grams/day
Average Daily Idling Emissions	0.006	pounds/day
Annual Average Idling Emissoins	3.254E-05	g/sec averaged over the entire year

Emission Allocation

Exhaust Emissions

Assunption: assume one-half of all work trucks travel along the onroad-offroad haul truck route and the second half of the work vehicles travel along the offroad haul truck route

Average Daily Exhaust Emissons along onroad-offroad haul truck route:	5.851E-06	grams/sec
Average Daily Exhaust Emissons along offroad haul truck route:	5.851E-06	grams/sec

Idling Emissions

Assunption: assume one-half of all work trucks idle at the maintenance area and	4.845E-05	grams/sec
the second half of the work vehicles idle at the haul truck excavation area	4.845E-05	grams/sec

Emission Total	**0.021**	**pounds/day**
	0.0023	**tons/year**

EMFAC2017 (v1.0.2) Emission Rates
Region Type: PM10unty
Region: TULARE
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW **DPM as PM10 Exhaust**

On-Road Haul Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM10_EXH
TULARE	2025	T7 tractor	Aggregated	5	DSL	0.012
TULARE	2025	T7 tractor	Aggregated	10	DSL	0.011
TULARE	2025	T7 tractor	Aggregated	15	DSL	0.008
TULARE	2025	T7 tractor	Aggregated	20	DSL	0.007
TULARE	2025	T7 tractor	Aggregated	25	DSL	0.007

Average Emission Factors (g/mile) 5 mph to 15 mph

	PM10_RUNEX
T7 tractor	0.0103

Average Emission Factors (g/mile) 5 mph to 25 mph

PM10_RUNEX
0.0090

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	pollutant	PM10 IDLEX emission_rate
2025	Annual	Tulare (SJV)	T7 tractor	Dsl	PM10	0.0101

Offroad Haul Truck and Water Truck Emissions

Exhaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM10 RUNEX
TULARE	2025	T7 single PM10nstructio	Aggregated	5	DSL	0.016
TULARE	2025	T7 single PM10nstructio	Aggregated	10	DSL	0.014
TULARE	2025	T7 single PM10nstructio	Aggregated	15	DSL	0.010

Average (5-15mph)

PM10_RUNEX
0.013

Idling Emission Factors (g/idle hour)

calendar_year	season_month	sub_area	vehicle_class	fuel	process	PM10_IDLEX
2025	Annual	Tulare (SJV)	T7 Single PM10nstructior	Dsl	IDLEX	0.011

Work Vehicles - Exhaust Emissions

Eshaust Emission Factors (g/mile)

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	PM10 RUNEX
TULARE	2025	LHD1	Aggregated	5	DSL	0.081
TULARE	2025	LHD1	Aggregated	10	DSL	0.060
TULARE	2025	LHD1	Aggregated	15	DSL	0.046
					Average 5-15mpl	0.062
TULARE	2025	LHD2	Aggregated	5	DSL	0.071
TULARE	2025	LHD2	Aggregated	10	DSL	0.055
TULARE	2025	LHD2	Aggregated	15	DSL	0.043
					Average 5-15mpl	0.056

Work Vehicles - Idling Emissions

calendar_year	season_month	sub_area	vehicle_class	fuel	process	PM10_IDLEX
2020	Annual	Tulare (SJV)	LHDT1	Dsl	IDLEX	0.79
2020	Annual	Tulare (SJV)	LHDT2	Dsl	IDLEX	0.80

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  CO

**Model Calculates  2 Short Term Average(s) of:   1-HR   8-HR

**This Run Includes:    398 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      5 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      0 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.9 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   700000_CO_2025_R3.err
```

**File for Summary of Results: 700000_CO_2025_R3.sum

♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project REV3 *** 07/21/19
*** AERMET - VERSION 18081 *** *** CO - MItigation 2025 700,000 t/y Throughput *** 17:11:16
PAGE 2

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project REV3 *** 07/21/19
*** AERMET - VERSION 18081 *** *** CO - MItigation 2025 700,000 t/y Throughput *** 17:11:16
PAGE 3

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\Porterville_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\Porterville_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** CO - MItigation 2025 700,000 t/y Throughput                ***       17:11:16
                                                                                          PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                          ** CONC OF CO       IN MICROGRAMS/M**3                    **

                                       DATE                                          NETWORK
GROUP ID                     AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS      61.78339  ON 08022508: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
       HIGH   8TH HIGH VALUE IS      38.09125  ON 09012908: AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                 GP = GRIDPOLR
                 DC = DISCCART
                 DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** CO - MItigation 2025 700,000 t/y Throughput                ***       17:11:16
                                                                                          PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST  8-HR RESULTS ***


                          ** CONC OF CO       IN MICROGRAMS/M**3                    **

                                       DATE                                          NETWORK
GROUP ID                     AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS      10.29723c ON 08022508: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                 GP = GRIDPOLR
                 DC = DISCCART
                 DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** CO - MItigation 2025 700,000 t/y Throughput                ***       17:11:16
                                                                                          PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          6 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***
```

```
  ********   WARNING MESSAGES   ********
SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     903       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     904       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
ME W187    5728       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

- - - -

700000_NOx1_2025_R3
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.9 MB of RAM.

**Input Runstream File: aermod.inp
**Output Print File: aermod.out

**Detailed Error/Message File: 700000_NOx1_2025_R3.err
**File for Summary of Results: 700000_NOx1_2025_R3.sum

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\Porterville_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\Porterville_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0

```
06 01 01   1 18   -6.7  0.108 -9.000 -9.000 -999.   85.    16.3  0.03   0.76   1.00    1.76   97.   10.0  284.1    2.0
06 01 01   1 19   -6.5  0.105 -9.000 -9.000 -999.   81.    15.7  0.02   0.76   1.00    1.76   44.   10.0  284.1    2.0
06 01 01   1 20  -17.2  0.177 -9.000 -9.000 -999.  178.    34.3  0.02   0.76   1.00    2.86  317.   10.0  284.1    2.0
06 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.76   1.00    0.00    0.   10.0  284.1    2.0
06 01 01   1 22  -11.9  0.144 -9.000 -9.000 -999.  131.    22.7  0.02   0.76   1.00    2.36   32.   10.0  284.1    2.0
06 01 01   1 23  -18.8  0.192 -9.000 -9.000 -999.  202.    40.6  0.04   0.76   1.00    2.86   20.   10.0  284.1    2.0
06 01 01   1 24  -17.2  0.177 -9.000 -9.000 -999.  178.    34.3  0.02   0.76   1.00    2.86   50.   10.0  285.1    2.0


First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** NOx 1-hour - MItigation 2025 700,000 t/y Throughput          ***       17:04:36
                                                                                PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                *** THE SUMMARY OF MAXIMUM   1ST-HIGHEST MAX DAILY  1-HR RESULTS AVERAGED OVER   4 YEARS ***


                          ** CONC OF NO2      IN MICROGRAMS/M**3                    **

                                                                          NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS      24.45684 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS      23.68509 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS      21.74696 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS      21.35622 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS      19.81889 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS      14.63704 AT (  324807.30,  3986830.12,   176.00,   470.00,    0.00)  DC
        7TH HIGHEST VALUE IS      14.24732 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS      14.02936 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS      13.76709 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS      12.22667 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** NOx 1-hour - MItigation 2025 700,000 t/y Throughput          ***       17:04:36
                                                                                PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                *** THE SUMMARY OF MAXIMUM   8TH-HIGHEST MAX DAILY  1-HR RESULTS AVERAGED OVER   4 YEARS ***


                          ** CONC OF NO2      IN MICROGRAMS/M**3                    **

                                                                          NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS      11.89110 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS       8.56742 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS       6.09324 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS       5.81845 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS       4.16555 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS       3.06417 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        7TH HIGHEST VALUE IS       2.98376 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS       2.84808 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS       2.38353 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS       2.37021 AT (  324184.95,  3985748.04,   259.49,   264.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                GP = GRIDPOLR
                DC = DISCCART
                DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** NOx 1-hour - MItigation 2025 700,000 t/y Throughput          ***       17:04:36
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of          0 Fatal Error Message(s)
A Total of          7 Warning Message(s)
A Total of       7410 Informational Message(s)

A Total of      35088 Hours Were Processed

A Total of       6527 Calm Hours Identified

A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     903       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     904       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
ME W187    5728      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
MX W481   35089         MAIN: Data Remaining After End of Year. Number of Hours=        24
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

- - - -

```
**Approximate Storage Requirements of Model =      3.7 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out

**Detailed Error/Message File:   700000_NOxA_2025_R3.err
**File for Summary of Results:   700000_NOxA_2025_R3.sum
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
*** AERMET - VERSION  18081 ***   *** NOx Annual - MItigation 2025 700,000 t/y Throughput          ***       17:07:50
                                                                                          PAGE   2
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                   (1=YES; 0=NO)

        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                       *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                   (METERS/SEC)

                                 1.54,   3.09,   5.14,   8.23,  10.80,
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
*** AERMET - VERSION  18081 ***   *** NOx Annual - MItigation 2025 700,000 t/y Throughput          ***       17:07:50
                                                                                          PAGE   3
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                       *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   ..\..\..\AERMOD\Porterville_2006-2009.SFC                    Met Version:  18081
  Profile file:   ..\..\..\AERMOD\Porterville_2006-2009.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    23149              Upper air station no.:    23230
            Name: UNKNOWN                           Name: OAKLAND/WSO_AP
            Year:   2006                        Year:   2006

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 06 01 01   1 01  -24.8  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  101.   10.0  280.1    2.0
 06 01 01   1 02  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  108.   10.0  281.1    2.0
 06 01 01   1 03  -21.4  0.215 -9.000 -9.000 -999.  240.     50.9  0.03   0.76   1.00    3.36  104.   10.0  280.1    2.0
 06 01 01   1 04  -24.7  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 05  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 06  -25.0  0.252 -9.000 -9.000 -999.  303.     69.7  0.03   0.76   1.00    3.86  132.   10.0  281.1    2.0
 06 01 01   1 07  -28.4  0.286 -9.000 -9.000 -999.  366.     89.8  0.03   0.76   1.00    4.36  145.   10.0  281.1    2.0
 06 01 01   1 08  -18.7  0.205 -9.000 -9.000 -999.  225.     46.2  0.02   0.76   0.61    3.36  163.   10.0  280.1    2.0
 06 01 01   1 09   11.0 -9.000 -9.000 -9.000   95. -999. -99999.0  0.03   0.76   0.34    0.00    0.   10.0  282.1    2.0
 06 01 01   1 10   48.2 -9.000 -9.000 -9.000  186. -999. -99999.0  0.03   0.76   0.25    0.00    0.   10.0  284.1    2.0
 06 01 01   1 11   81.6  0.277  0.863  0.005  280.  350.    -23.1  0.04   0.76   0.22    3.36    4.   10.0  284.1    2.0
 06 01 01   1 12   96.6  0.230  0.994  0.005  360.  265.    -11.1  0.02   0.76   0.21    2.86  306.   10.0  284.1    2.0
 06 01 01   1 13  101.2 -9.000 -9.000 -9.000  608. -999. -99999.0  0.03   0.76   0.21    0.00    0.   10.0  284.1    2.0
 06 01 01   1 14   17.7  0.212  0.685  0.005  644.  234.    -47.5  0.03   0.76   0.22    2.86  119.   10.0  284.1    2.0
 06 01 01   1 15   10.3  0.274  0.579  0.005  666.  344.   -176.6  0.03   0.76   0.25    3.86  142.   10.0  284.1    2.0
 06 01 01   1 16    0.1  0.263  0.123  0.005  668.  323.  -8888.0  0.03   0.76   0.35    3.86  104.   10.0  284.1    2.0
 06 01 01   1 17  -11.7  0.144 -9.000 -9.000 -999.  139.     22.8  0.02   0.76   0.62    2.36   41.   10.0  283.1    2.0
 06 01 01   1 18   -6.7  0.108 -9.000 -9.000 -999.   85.     16.3  0.03   0.76   1.00    1.76   97.   10.0  284.1    2.0
 06 01 01   1 19   -6.5  0.105 -9.000 -9.000 -999.   81.     15.7  0.02   0.76   1.00    1.76   44.   10.0  284.1    2.0
```

```
06 01 01   1 20  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86  317.   10.0  284.1    2.0
06 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.76   1.00    0.00    0.   10.0  284.1    2.0
06 01 01   1 22  -11.9  0.144 -9.000 -9.000 -999.  131.     22.7  0.02   0.76   1.00    2.36   32.   10.0  284.1    2.0
06 01 01   1 23  -18.8  0.192 -9.000 -9.000 -999.  202.     40.6  0.04   0.76   1.00    2.86   20.   10.0  284.1    2.0
06 01 01   1 24  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86   50.   10.0  285.1    2.0


First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
*** AERMET - VERSION  18081 ***   *** NOx Annual - MItigation 2025 700,000 t/y Throughput          ***       17:07:50
                                                                                          PAGE   4
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                        *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   4 YEARS ***


                         ** CONC OF NO2      IN MICROGRAMS/M**3                    **

                                                                          NETWORK
GROUP ID                  AVERAGE CONC             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       1.05444 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS       0.53985 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS       0.42935 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS       0.33194 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS       0.30732 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS       0.25378 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        7TH HIGHEST VALUE IS       0.24514 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS       0.24506 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS       0.24028 AT (  324807.30,  3986830.12,   176.00,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS       0.21444 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


*** RECEPTOR TYPES:  GC = GRIDCART
                     GP = GRIDPOLR
                     DC = DISCCART
                     DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
*** AERMET - VERSION  18081 ***   *** NOx Annual - MItigation 2025 700,000 t/y Throughput          ***       17:07:50
                                                                                          PAGE   5
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of          0 Fatal Error Message(s)
A Total of          7 Warning Message(s)
A Total of       7410 Informational Message(s)

A Total of      35088 Hours Were Processed

A Total of       6527 Calm Hours Identified

A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
```

SO W320	903	PPARM: Input Parameter May Be Out-of-Range for Parameter	VS
SO W320	904	PPARM: Input Parameter May Be Out-of-Range for Parameter	VS
ME W187	928	MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET	
MX W481	35089	MAIN: Data Remaining After End of Year. Number of Hours=	24

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM10E

**Model Calculates  1 Short Term Average(s) of:  24-HR

**This Run Includes:    398 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      5 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      0 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.9 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   700000_PM1024E_2025_R3.err
```

```
**File for Summary of Results:   700000_PM1024E_2025_R3.sum
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** PM10 24 Hr Exhaust - MItigation 2025 700,000 t/y Throughput        ***       17:28:34
                                                                                                   PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                              (1=YES; 0=NO)

        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

           NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                              *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                (METERS/SEC)

                                        1.54,   3.09,   5.14,   8.23,  10.80,
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** PM10 24 Hr Exhaust - MItigation 2025 700,000 t/y Throughput        ***       17:28:34
                                                                                                   PAGE   3
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   ..\..\..\AERMOD\Porterville_2006-2009.SFC                          Met Version:  18081
   Profile file:   ..\..\..\AERMOD\Porterville_2006-2009.PFL
   Surface format: FREE
   Profile format: FREE
   Surface station no.:    23149                 Upper air station no.:    23230
              Name: UNKNOWN                              Name: OAKLAND/WSO_AP
              Year:   2006                            Year:   2006

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 06 01 01   1 01  -24.8  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  101.   10.0  280.1    2.0
 06 01 01   1 02  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  108.   10.0  281.1    2.0
 06 01 01   1 03  -21.4  0.215 -9.000 -9.000 -999.  240.     50.9  0.03   0.76   1.00    3.36  104.   10.0  280.1    2.0
 06 01 01   1 04  -24.7  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 05  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 06  -25.0  0.252 -9.000 -9.000 -999.  303.     69.7  0.03   0.76   1.00    3.86  132.   10.0  281.1    2.0
 06 01 01   1 07  -28.4  0.286 -9.000 -9.000 -999.  366.     89.8  0.03   0.76   1.00    4.36  145.   10.0  281.1    2.0
 06 01 01   1 08  -18.7  0.205 -9.000 -9.000 -999.  225.     46.2  0.02   0.76   0.61    3.36  163.   10.0  280.1    2.0
 06 01 01   1 09   11.0 -9.000 -9.000 -9.000   95. -999. -99999.0  0.03   0.76   0.34    0.00    0.   10.0  282.1    2.0
 06 01 01   1 10   48.2 -9.000 -9.000 -9.000  186. -999. -99999.0  0.03   0.76   0.25    0.00    0.   10.0  284.1    2.0
 06 01 01   1 11   81.6  0.277  0.863  0.005  280.  350.    -23.1  0.04   0.76   0.22    3.36    4.   10.0  284.1    2.0
 06 01 01   1 12   96.6  0.230  0.994  0.005  360.  265.    -11.1  0.02   0.76   0.21    2.86  306.   10.0  284.1    2.0
 06 01 01   1 13  101.2 -9.000 -9.000 -9.000  608. -999. -99999.0  0.03   0.76   0.21    0.00    0.   10.0  284.1    2.0
 06 01 01   1 14   17.7  0.212  0.685  0.005  644.  234.    -47.5  0.03   0.76   0.22    2.86  119.   10.0  284.1    2.0
 06 01 01   1 15   10.3  0.274  0.579  0.005  666.  344.   -176.6  0.03   0.76   0.25    3.86  142.   10.0  284.1    2.0
 06 01 01   1 16    0.1  0.263  0.123  0.005  668.  323.  -8888.0  0.03   0.76   0.35    3.86  104.   10.0  284.1    2.0
 06 01 01   1 17  -11.7  0.144 -9.000 -9.000 -999.  139.     22.8  0.02   0.76   0.62    2.36   41.   10.0  283.1    2.0
 06 01 01   1 18   -6.7  0.108 -9.000 -9.000 -999.   85.     16.3  0.03   0.76   1.00    1.76   97.   10.0  284.1    2.0
 06 01 01   1 19   -6.5  0.105 -9.000 -9.000 -999.   81.     15.7  0.02   0.76   1.00    1.76   44.   10.0  284.1    2.0
 06 01 01   1 20  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86  317.   10.0  284.1    2.0
 06 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.76   1.00    0.00    0.   10.0  284.1    2.0
 06 01 01   1 22  -11.9  0.144 -9.000 -9.000 -999.  131.     22.7  0.02   0.76   1.00    2.36   32.   10.0  284.1    2.0
 06 01 01   1 23  -18.8  0.192 -9.000 -9.000 -999.  202.     40.6  0.04   0.76   1.00    2.86   20.   10.0  284.1    2.0
 06 01 01   1 24  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86   50.   10.0  285.1    2.0
```

```
First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
*** AERMET - VERSION  18081 ***   *** PM10 24 Hr Exhaust - MItigation 2025 700,000 t/y Throughput        ***       17:28:34
                                                                                          PAGE   4
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***


                          ** CONC OF PM10E    IN MICROGRAMS/M**3                    **

                                       DATE                                          NETWORK
GROUP ID                     AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.01454c ON 08022524: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


*** RECEPTOR TYPES:  GC = GRIDCART
                     GP = GRIDPOLR
                     DC = DISCCART
                     DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
*** AERMET - VERSION  18081 ***   *** PM10 24 Hr Exhaust - MItigation 2025 700,000 t/y Throughput        ***       17:28:34
                                                                                          PAGE   5
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of          0 Fatal Error Message(s)
A Total of          6 Warning Message(s)
A Total of       7410 Informational Message(s)

A Total of      35088 Hours Were Processed

A Total of       6527 Calm Hours Identified

A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     903       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
SO W320     904       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
ME W187    5728       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

- - - -

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\Porterville_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\Porterville_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/22/19
 *** AERMET - VERSION  18081 ***   *** Max 24hr  PM10 Fugitive Dust -  2025 700,000 t/y Throughput        ***       14:57:45
                                                                                          PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***


                          ** CONC OF PM_10FD  IN MICROGRAMS/M**3                    **

                                       DATE                                                NETWORK
GROUP ID                     AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       6.38522c ON 06010524: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/22/19
 *** AERMET - VERSION  18081 ***   *** Max 24hr  PM10 Fugitive Dust -  2025 700,000 t/y Throughput        ***       14:57:45
                                                                                          PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          3 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 SO W320     898       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     899       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187    5710       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM2.5E

**Model Calculates ANNUAL Averages Only

**This Run Includes:    398 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      5 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      0 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of ANNUAL Averages by Receptor
       Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.7 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out
```

```
**Detailed Error/Message File:   700000_PM10AE_2025_R3.err
**File for Summary of Results:   700000_PM10AE_2025_R3.sum
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
*** AERMET - VERSION  18081 ***   *** PM10 24 Annual Exhaust - MItigation 2025 700,000 t/y Throughput     ***       17:25:06
                                                                                                   PAGE   2
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                      (1=YES; 0=NO)

        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                     *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                      (METERS/SEC)

                                 1.54,   3.09,   5.14,   8.23,  10.80,
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
*** AERMET - VERSION  18081 ***   *** PM10 24 Annual Exhaust - MItigation 2025 700,000 t/y Throughput     ***       17:25:06
                                                                                                   PAGE   3
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                       *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   ..\..\..\AERMOD\Porterville_2006-2009.SFC                    Met Version:  18081
  Profile file:   ..\..\..\AERMOD\Porterville_2006-2009.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    23149              Upper air station no.:    23230
            Name: UNKNOWN                           Name: OAKLAND/WSO_AP
            Year:   2006                        Year:   2006

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 06 01 01   1 01  -24.8  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  101.   10.0  280.1    2.0
 06 01 01   1 02  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  108.   10.0  281.1    2.0
 06 01 01   1 03  -21.4  0.215 -9.000 -9.000 -999.  240.     50.9  0.03   0.76   1.00    3.36  104.   10.0  280.1    2.0
 06 01 01   1 04  -24.7  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 05  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 06  -25.0  0.252 -9.000 -9.000 -999.  303.     69.7  0.03   0.76   1.00    3.86  132.   10.0  281.1    2.0
 06 01 01   1 07  -28.4  0.286 -9.000 -9.000 -999.  366.     89.8  0.03   0.76   1.00    4.36  145.   10.0  281.1    2.0
 06 01 01   1 08  -18.7  0.205 -9.000 -9.000 -999.  225.     46.2  0.02   0.76   0.61    3.36  163.   10.0  280.1    2.0
 06 01 01   1 09   11.0 -9.000 -9.000 -9.000   95. -999. -99999.0  0.03   0.76   0.34    0.00    0.   10.0  282.1    2.0
 06 01 01   1 10   48.2 -9.000 -9.000 -9.000  186. -999. -99999.0  0.03   0.76   0.25    0.00    0.   10.0  284.1    2.0
 06 01 01   1 11   81.6  0.277  0.863  0.005  280.  350.    -23.1  0.04   0.76   0.22    3.36    4.   10.0  284.1    2.0
 06 01 01   1 12   96.6  0.230  0.994  0.005  360.  265.    -11.1  0.02   0.76   0.21    2.86  306.   10.0  284.1    2.0
 06 01 01   1 13  101.2 -9.000 -9.000 -9.000  608. -999. -99999.0  0.03   0.76   0.21    0.00    0.   10.0  284.1    2.0
 06 01 01   1 14   17.7  0.212  0.685  0.005  644.  234.    -47.5  0.03   0.76   0.22    2.86  119.   10.0  284.1    2.0
 06 01 01   1 15   10.3  0.274  0.579  0.005  666.  344.   -176.6  0.03   0.76   0.25    3.86  142.   10.0  284.1    2.0
 06 01 01   1 16    0.1  0.263  0.123  0.005  668.  323.  -8888.0  0.03   0.76   0.35    3.86  104.   10.0  284.1    2.0
 06 01 01   1 17  -11.7  0.144 -9.000 -9.000 -999.  139.     22.8  0.02   0.76   0.62    2.36   41.   10.0  283.1    2.0
 06 01 01   1 18   -6.7  0.108 -9.000 -9.000 -999.   85.     16.3  0.03   0.76   1.00    1.76   97.   10.0  284.1    2.0
 06 01 01   1 19   -6.5  0.105 -9.000 -9.000 -999.   81.     15.7  0.02   0.76   1.00    1.76   44.   10.0  284.1    2.0
 06 01 01   1 20  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86  317.   10.0  284.1    2.0
 06 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.76   1.00    0.00    0.   10.0  284.1    2.0
 06 01 01   1 22  -11.9  0.144 -9.000 -9.000 -999.  131.     22.7  0.02   0.76   1.00    2.36   32.   10.0  284.1    2.0
 06 01 01   1 23  -18.8  0.192 -9.000 -9.000 -999.  202.     40.6  0.04   0.76   1.00    2.86   20.   10.0  284.1    2.0
 06 01 01   1 24  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86   50.   10.0  285.1    2.0
```

```
 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** PM10 24 Annual Exhaust - MItigation 2025 700,000 t/y Throughput      ***       17:25:06
                                                                                                   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   4 YEARS ***


                           ** CONC OF PM2.5E   IN MICROGRAMS/M**3                    **

                                                                                 NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.00460 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
          2ND HIGHEST VALUE IS       0.00249 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
          3RD HIGHEST VALUE IS       0.00195 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
          4TH HIGHEST VALUE IS       0.00147 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
          5TH HIGHEST VALUE IS       0.00143 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
          6TH HIGHEST VALUE IS       0.00108 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
          7TH HIGHEST VALUE IS       0.00104 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
          8TH HIGHEST VALUE IS       0.00104 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
          9TH HIGHEST VALUE IS       0.00099 AT (  324184.95,  3985748.04,   259.49,   264.00,    0.00)  DC
         10TH HIGHEST VALUE IS       0.00090 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** PM10 24 Annual Exhaust - MItigation 2025 700,000 t/y Throughput      ***       17:25:06
                                                                                                   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          7 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     903       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     904       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187     928      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
 MX W481   35089        MAIN: Data Remaining After End of Year. Number of Hours=         24
```

```
♀*** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/22/19
*** AERMET - VERSION  18081 ***   *** Annual  PM10 Fugitive Dust -  2025 700,000 t/y Throughput          ***       14:49:40
                                                                                                   PAGE   1
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM_10FD

**Model Calculates ANNUAL Averages Only

**This Run Includes:    397 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      3 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      1 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of ANNUAL Averages by Receptor
       Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.8 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out
```

**Detailed Error/Message File: 7000_PM10AFD_2025_R3.err
**File for Summary of Results: 7000_PM10AFD_2025_R3.sum

♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project *** 07/22/19
*** AERMET - VERSION 18081 *** *** Annual PM10 Fugitive Dust - 2025 700,000 t/y Throughput *** 14:49:40
PAGE 2

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project *** 07/22/19
*** AERMET - VERSION 18081 *** *** Annual PM10 Fugitive Dust - 2025 700,000 t/y Throughput *** 14:49:40
PAGE 3

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\Porterville_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\Porterville_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/22/19
 *** AERMET - VERSION  18081 ***   *** Annual  PM10 Fugitive Dust -  2025 700,000 t/y Throughput          ***       14:49:40
                                                                                                   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   4 YEARS ***


                           ** CONC OF PM_10FD  IN MICROGRAMS/M**3                     **

                                                                                  NETWORK
GROUP ID                    AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       1.98245 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
          2ND HIGHEST VALUE IS       1.08378 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
          3RD HIGHEST VALUE IS       0.85464 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
          4TH HIGHEST VALUE IS       0.75160 AT (  324184.95,  3985748.04,   259.49,   264.00,    0.00)  DC
          5TH HIGHEST VALUE IS       0.70667 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
          6TH HIGHEST VALUE IS       0.64128 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
          7TH HIGHEST VALUE IS       0.44124 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
          8TH HIGHEST VALUE IS       0.42606 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
          9TH HIGHEST VALUE IS       0.42332 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
         10TH HIGHEST VALUE IS       0.37252 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/22/19
 *** AERMET - VERSION  18081 ***   *** Annual  PM10 Fugitive Dust -  2025 700,000 t/y Throughput          ***       14:49:40
                                                                                                   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          4 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 SO W320     898       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     899       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187     925      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
 MX W481   35089        MAIN: Data Remaining After End of Year. Number of Hours=         24
```

♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project REV3 *** 07/21/19
*** AERMET - VERSION 18081 *** *** PM2.5 24 Hr Exhaust - MItigation 2025 700,000 t/y Throughput *** 17:20:04

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***
- - - -

```
**File for Summary of Results:   700000_PM2524E_2025_R3.sum
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** PM2.5 24 Hr Exhaust - MItigation 2025 700,000 t/y Throughput        ***       17:20:04
                                                                                                   PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                (1=YES; 0=NO)

        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

           NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                          *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                              (METERS/SEC)

                                     1.54,   3.09,   5.14,   8.23,  10.80,
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** PM2.5 24 Hr Exhaust - MItigation 2025 700,000 t/y Throughput        ***       17:20:04
                                                                                                   PAGE   3
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   ..\..\..\AERMOD\Porterville_2006-2009.SFC                          Met Version:  18081
   Profile file:   ..\..\..\AERMOD\Porterville_2006-2009.PFL
   Surface format: FREE
   Profile format: FREE
   Surface station no.:    23149                Upper air station no.:    23230
              Name: UNKNOWN                             Name: OAKLAND/WSO_AP
              Year:   2006                          Year:   2006

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 06 01 01   1 01  -24.8  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  101.   10.0  280.1    2.0
 06 01 01   1 02  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  108.   10.0  281.1    2.0
 06 01 01   1 03  -21.4  0.215 -9.000 -9.000 -999.  240.     50.9  0.03   0.76   1.00    3.36  104.   10.0  280.1    2.0
 06 01 01   1 04  -24.7  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 05  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 06  -25.0  0.252 -9.000 -9.000 -999.  303.     69.7  0.03   0.76   1.00    3.86  132.   10.0  281.1    2.0
 06 01 01   1 07  -28.4  0.286 -9.000 -9.000 -999.  366.     89.8  0.03   0.76   1.00    4.36  145.   10.0  281.1    2.0
 06 01 01   1 08  -18.7  0.205 -9.000 -9.000 -999.  225.     46.2  0.02   0.76   0.61    3.36  163.   10.0  280.1    2.0
 06 01 01   1 09   11.0 -9.000 -9.000 -9.000   95. -999. -99999.0  0.03   0.76   0.34    0.00    0.   10.0  282.1    2.0
 06 01 01   1 10   48.2 -9.000 -9.000 -9.000  186. -999. -99999.0  0.03   0.76   0.25    0.00    0.   10.0  284.1    2.0
 06 01 01   1 11   81.6  0.277  0.863  0.005  280.  350.    -23.1  0.04   0.76   0.22    3.36    4.   10.0  284.1    2.0
 06 01 01   1 12   96.6  0.230  0.994  0.005  360.  265.    -11.1  0.02   0.76   0.21    2.86  306.   10.0  284.1    2.0
 06 01 01   1 13  101.2 -9.000 -9.000 -9.000  608. -999. -99999.0  0.03   0.76   0.21    0.00    0.   10.0  284.1    2.0
 06 01 01   1 14   17.7  0.212  0.685  0.005  644.  234.    -47.5  0.03   0.76   0.22    2.86  119.   10.0  284.1    2.0
 06 01 01   1 15   10.3  0.274  0.579  0.005  666.  344.   -176.6  0.03   0.76   0.25    3.86  142.   10.0  284.1    2.0
 06 01 01   1 16    0.1  0.263  0.123  0.005  668.  323.  -8888.0  0.03   0.76   0.35    3.86  104.   10.0  284.1    2.0
 06 01 01   1 17  -11.7  0.144 -9.000 -9.000 -999.  139.     22.8  0.02   0.76   0.62    2.36   41.   10.0  283.1    2.0
 06 01 01   1 18   -6.7  0.108 -9.000 -9.000 -999.   85.     16.3  0.03   0.76   1.00    1.76   97.   10.0  284.1    2.0
 06 01 01   1 19   -6.5  0.105 -9.000 -9.000 -999.   81.     15.7  0.02   0.76   1.00    1.76   44.   10.0  284.1    2.0
 06 01 01   1 20  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86  317.   10.0  284.1    2.0
 06 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.76   1.00    0.00    0.   10.0  284.1    2.0
 06 01 01   1 22  -11.9  0.144 -9.000 -9.000 -999.  131.     22.7  0.02   0.76   1.00    2.36   32.   10.0  284.1    2.0
 06 01 01   1 23  -18.8  0.192 -9.000 -9.000 -999.  202.     40.6  0.04   0.76   1.00    2.86   20.   10.0  284.1    2.0
 06 01 01   1 24  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86   50.   10.0  285.1    2.0
```

```
First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** PM2.5 24 Hr Exhaust - MItigation 2025 700,000 t/y Throughput        ***       17:20:04
                                                                                    PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***


                          ** CONC OF PM2.5E   IN MICROGRAMS/M**3                    **

                                       DATE                                          NETWORK
GROUP ID                     AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.01233c ON 08022524: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** PM2.5 24 Hr Exhaust - MItigation 2025 700,000 t/y Throughput        ***       17:20:04
                                                                                    PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          6 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


    ******** FATAL ERROR MESSAGES ********
             ***  NONE  ***


    ********   WARNING MESSAGES   ********
 SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     903       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     904       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187    5728       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM_2.5FD

**Model Calculates  1 Short Term Average(s) of:  24-HR

**This Run Includes:    397 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      3 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      1 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      4.0 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   700000_PM2524FD_2025_R3.err
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\Porterville_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\Porterville_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/22/19
 *** AERMET - VERSION  18081 ***   *** Max 24hr  PM2.5 Fugitive Dust -  2025 700,000 t/y Throughput        ***       15:05:10
                                                                                                  PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                  *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***


                          ** CONC OF PM_2.5FD IN MICROGRAMS/M**3                    **

                                       DATE                                          NETWORK
GROUP ID                     AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       1.17957c ON 08022524: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/22/19
 *** AERMET - VERSION  18081 ***   *** Max 24hr  PM2.5 Fugitive Dust -  2025 700,000 t/y Throughput        ***       15:05:10
                                                                                                  PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          3 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


    ******** FATAL ERROR MESSAGES ********
             ***  NONE  ***


    ********   WARNING MESSAGES   ********
 SO W320     898       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     899       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187    5710       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project REV3 *** 07/19/19
*** AERMET - VERSION 18081 *** *** PM2.5 Annual Exhaust - MItigation 2025 700,000 t/y Throughput *** 09:09:30


```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM2.5E

**Model Calculates ANNUAL Averages Only

**This Run Includes:    398 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      5 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      0 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of ANNUAL Averages by Receptor
       Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.7 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out
```

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\Porterville_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\Porterville_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
 *** AERMET - VERSION  18081 ***   *** PM2.5 Annual Exhaust - MItigation 2025 700,000 t/y Throughput       ***       09:09:30
                                                                                                   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   4 YEARS ***


                           ** CONC OF PM2.5E   IN MICROGRAMS/M**3                    **

                                                                                  NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.00289 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS       0.00165 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS       0.00131 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS       0.00101 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS       0.00100 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS       0.00083 AT (  324184.95,  3985748.04,   259.49,   264.00,    0.00)  DC
        7TH HIGHEST VALUE IS       0.00072 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS       0.00070 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS       0.00069 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS       0.00061 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/19/19
 *** AERMET - VERSION  18081 ***   *** PM2.5 Annual Exhaust - MItigation 2025 700,000 t/y Throughput       ***       09:09:30
                                                                                                   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          7 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 SO W320     503       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     504       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     902       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     903       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     904       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187     928      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
 MX W481   35089        MAIN: Data Remaining After End of Year. Number of Hours=         24
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM_2.5FD

**Model Calculates ANNUAL Averages Only

**This Run Includes:    397 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      3 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:    393 VOLUME source(s)
             and:      1 AREA type source(s)
             and:      0 LINE source(s)
             and:      0 OPENPIT source(s)
             and:      0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of ANNUAL Averages by Receptor
       Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.8 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out
```

```
**Detailed Error/Message File:   700000_PM25AFD_2025_R3.err
**File for Summary of Results:   700000_PM25AFD_2025_R3.sum
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                    ***       07/22/19
*** AERMET - VERSION  18081 ***   *** Annual  PM2.5 Fugitive Dust -  2025 700,000 t/y Throughput        ***       15:01:41
                                                                                                PAGE   2
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                        *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                   (1=YES; 0=NO)

        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
        1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

          NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                     *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                   (METERS/SEC)

                                 1.54,   3.09,   5.14,   8.23,  10.80,
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                    ***       07/22/19
*** AERMET - VERSION  18081 ***   *** Annual  PM2.5 Fugitive Dust -  2025 700,000 t/y Throughput        ***       15:01:41
                                                                                                PAGE   3
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                     *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   ..\..\..\AERMOD\Porterville_2006-2009.SFC                    Met Version:  18081
  Profile file:   ..\..\..\AERMOD\Porterville_2006-2009.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    23149              Upper air station no.:    23230
            Name: UNKNOWN                           Name: OAKLAND/WSO_AP
            Year:   2006                        Year:   2006

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 06 01 01   1 01  -24.8  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  101.   10.0  280.1    2.0
 06 01 01   1 02  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  108.   10.0  281.1    2.0
 06 01 01   1 03  -21.4  0.215 -9.000 -9.000 -999.  240.     50.9  0.03   0.76   1.00    3.36  104.   10.0  280.1    2.0
 06 01 01   1 04  -24.7  0.249 -9.000 -9.000 -999.  297.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 05  -24.7  0.249 -9.000 -9.000 -999.  298.     68.0  0.03   0.76   1.00    3.86  113.   10.0  281.1    2.0
 06 01 01   1 06  -25.0  0.252 -9.000 -9.000 -999.  303.     69.7  0.03   0.76   1.00    3.86  132.   10.0  281.1    2.0
 06 01 01   1 07  -28.4  0.286 -9.000 -9.000 -999.  366.     89.8  0.03   0.76   1.00    4.36  145.   10.0  281.1    2.0
 06 01 01   1 08  -18.7  0.205 -9.000 -9.000 -999.  225.     46.2  0.02   0.76   0.61    3.36  163.   10.0  280.1    2.0
 06 01 01   1 09   11.0 -9.000 -9.000 -9.000   95. -999. -99999.0  0.03   0.76   0.34    0.00    0.   10.0  282.1    2.0
 06 01 01   1 10   48.2 -9.000 -9.000 -9.000  186. -999. -99999.0  0.03   0.76   0.25    0.00    0.   10.0  284.1    2.0
 06 01 01   1 11   81.6  0.277  0.863  0.005  280.  350.    -23.1  0.04   0.76   0.22    3.36    4.   10.0  284.1    2.0
 06 01 01   1 12   96.6  0.230  0.994  0.005  360.  265.    -11.1  0.02   0.76   0.21    2.86  306.   10.0  284.1    2.0
 06 01 01   1 13  101.2 -9.000 -9.000 -9.000  608. -999. -99999.0  0.03   0.76   0.21    0.00    0.   10.0  284.1    2.0
 06 01 01   1 14   17.7  0.212  0.685  0.005  644.  234.    -47.5  0.03   0.76   0.22    2.86  119.   10.0  284.1    2.0
 06 01 01   1 15   10.3  0.274  0.579  0.005  666.  344.   -176.6  0.03   0.76   0.25    3.86  142.   10.0  284.1    2.0
 06 01 01   1 16    0.1  0.263  0.123  0.005  668.  323.  -8888.0  0.03   0.76   0.35    3.86  104.   10.0  284.1    2.0
 06 01 01   1 17  -11.7  0.144 -9.000 -9.000 -999.  139.     22.8  0.02   0.76   0.62    2.36   41.   10.0  283.1    2.0
 06 01 01   1 18   -6.7  0.108 -9.000 -9.000 -999.   85.     16.3  0.03   0.76   1.00    1.76   97.   10.0  284.1    2.0
 06 01 01   1 19   -6.5  0.105 -9.000 -9.000 -999.   81.     15.7  0.02   0.76   1.00    1.76   44.   10.0  284.1    2.0
 06 01 01   1 20  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86  317.   10.0  284.1    2.0
 06 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.03   0.76   1.00    0.00    0.   10.0  284.1    2.0
 06 01 01   1 22  -11.9  0.144 -9.000 -9.000 -999.  131.     22.7  0.02   0.76   1.00    2.36   32.   10.0  284.1    2.0
 06 01 01   1 23  -18.8  0.192 -9.000 -9.000 -999.  202.     40.6  0.04   0.76   1.00    2.86   20.   10.0  284.1    2.0
 06 01 01   1 24  -17.2  0.177 -9.000 -9.000 -999.  178.     34.3  0.02   0.76   1.00    2.86   50.   10.0  285.1    2.0
```

```
 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/22/19
 *** AERMET - VERSION  18081 ***   *** Annual  PM2.5 Fugitive Dust -  2025 700,000 t/y Throughput          ***       15:01:41
                                                                                                   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   4 YEARS ***


                           ** CONC OF PM_2.5FD IN MICROGRAMS/M**3                    **

                                                                                 NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.32666 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS       0.18674 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS       0.14841 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS       0.11749 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS       0.11205 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS       0.09309 AT (  324184.95,  3985748.04,   259.49,   264.00,    0.00)  DC
        7TH HIGHEST VALUE IS       0.07832 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        8TH HIGHEST VALUE IS       0.07563 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS       0.07521 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS       0.06619 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project                          ***       07/22/19
 *** AERMET - VERSION  18081 ***   *** Annual  PM2.5 Fugitive Dust -  2025 700,000 t/y Throughput          ***       15:01:41
                                                                                                   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          4 Warning Message(s)
 A Total of       7410 Informational Message(s)

 A Total of      35088 Hours Were Processed

 A Total of       6527 Calm Hours Identified

 A Total of        883 Missing Hours Identified (  2.52 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 SO W320     898       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 SO W320     899       PPARM: Input Parameter May Be Out-of-Range for Parameter          VS
 ME W187     925      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
 MX W481   35089        MAIN: Data Remaining After End of Year. Number of Hours=         24
```

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
      1. Stack-tip Downwash.
      2. Model Accounts for ELEVated Terrain Effects.
      3. Use Calms Processing Routine.
      4. Use Missing Data Processing Routine.
      5. No Exponential Decay.

**Other Options Specified:
      ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      CCVR_Sub - Meteorological data includes CCVR substitutions
      TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  DPM

**Model Calculates  1 Short Term Average(s) of:   1-HR
   and Calculates PERIOD Averages

**This Run Includes:    550 Source(s);       1 Source Group(s); and      17 Receptor(s)

            with:      5 POINT(s), including
                     0 POINTCAP(s) and      0 POINTHOR(s)
             and:   545 VOLUME source(s)
             and:     0 AREA type source(s)
             and:     0 LINE source(s)
             and:     0 OPENPIT source(s)
             and:     0 BUOYANT LINE source(s) with      0 line(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  18081

**Output Options Selected:
       Model Outputs Tables of PERIOD Averages by Receptor
       Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
       Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
       Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   135.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
             Emission Units = GRAMS/SEC                          ;  Emission Rate Unit Factor =   0.10000E+07
             Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.7 MB of RAM.

**Input Runstream File:         aermod.inp
**Output Print File:            aermod.out
```

**Detailed Error/Message File: 700000_DPM_2025_R3.err
**File for Summary of Results: 700000_DPM_2025_R3.sum
♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project REV3 *** 07/21/19
*** AERMET - VERSION 18081 *** *** Annual DPM - MItigation 2025 700,000 t/y Throughput *** 16:59:42
PAGE 2
*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 18081 *** *** Deer Creek MIne Expansion Project REV3 *** 07/21/19
*** AERMET - VERSION 18081 *** *** Annual DPM - MItigation 2025 700,000 t/y Throughput *** 16:59:42
PAGE 3
*** MODELOPTs: RegDFAULT CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\..\AERMOD\Porterville_2006-2009.SFC Met Version: 18081
Profile file: ..\..\..\AERMOD\Porterville_2006-2009.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23149 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2006 Year: 2006

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
06	01	01	1	01	-24.8	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	101.	10.0	280.1	2.0
06	01	01	1	02	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	108.	10.0	281.1	2.0
06	01	01	1	03	-21.4	0.215	-9.000	-9.000	-999.	240.	50.9	0.03	0.76	1.00	3.36	104.	10.0	280.1	2.0
06	01	01	1	04	-24.7	0.249	-9.000	-9.000	-999.	297.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	05	-24.7	0.249	-9.000	-9.000	-999.	298.	68.0	0.03	0.76	1.00	3.86	113.	10.0	281.1	2.0
06	01	01	1	06	-25.0	0.252	-9.000	-9.000	-999.	303.	69.7	0.03	0.76	1.00	3.86	132.	10.0	281.1	2.0
06	01	01	1	07	-28.4	0.286	-9.000	-9.000	-999.	366.	89.8	0.03	0.76	1.00	4.36	145.	10.0	281.1	2.0
06	01	01	1	08	-18.7	0.205	-9.000	-9.000	-999.	225.	46.2	0.02	0.76	0.61	3.36	163.	10.0	280.1	2.0
06	01	01	1	09	11.0	-9.000	-9.000	-9.000	95.	-999.	-99999.0	0.03	0.76	0.34	0.00	0.	10.0	282.1	2.0
06	01	01	1	10	48.2	-9.000	-9.000	-9.000	186.	-999.	-99999.0	0.03	0.76	0.25	0.00	0.	10.0	284.1	2.0
06	01	01	1	11	81.6	0.277	0.863	0.005	280.	350.	-23.1	0.04	0.76	0.22	3.36	4.	10.0	284.1	2.0
06	01	01	1	12	96.6	0.230	0.994	0.005	360.	265.	-11.1	0.02	0.76	0.21	2.86	306.	10.0	284.1	2.0
06	01	01	1	13	101.2	-9.000	-9.000	-9.000	608.	-999.	-99999.0	0.03	0.76	0.21	0.00	0.	10.0	284.1	2.0
06	01	01	1	14	17.7	0.212	0.685	0.005	644.	234.	-47.5	0.03	0.76	0.22	2.86	119.	10.0	284.1	2.0
06	01	01	1	15	10.3	0.274	0.579	0.005	666.	344.	-176.6	0.03	0.76	0.25	3.86	142.	10.0	284.1	2.0
06	01	01	1	16	0.1	0.263	0.123	0.005	668.	323.	-8888.0	0.03	0.76	0.35	3.86	104.	10.0	284.1	2.0
06	01	01	1	17	-11.7	0.144	-9.000	-9.000	-999.	139.	22.8	0.02	0.76	0.62	2.36	41.	10.0	283.1	2.0
06	01	01	1	18	-6.7	0.108	-9.000	-9.000	-999.	85.	16.3	0.03	0.76	1.00	1.76	97.	10.0	284.1	2.0
06	01	01	1	19	-6.5	0.105	-9.000	-9.000	-999.	81.	15.7	0.02	0.76	1.00	1.76	44.	10.0	284.1	2.0
06	01	01	1	20	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	317.	10.0	284.1	2.0
06	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.03	0.76	1.00	0.00	0.	10.0	284.1	2.0
06	01	01	1	22	-11.9	0.144	-9.000	-9.000	-999.	131.	22.7	0.02	0.76	1.00	2.36	32.	10.0	284.1	2.0
06	01	01	1	23	-18.8	0.192	-9.000	-9.000	-999.	202.	40.6	0.04	0.76	1.00	2.86	20.	10.0	284.1	2.0
06	01	01	1	24	-17.2	0.177	-9.000	-9.000	-999.	178.	34.3	0.02	0.76	1.00	2.86	50.	10.0	285.1	2.0

```
 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 06 01 01 01   10.0 1  101.    3.86   280.2   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** Annual DPM - MItigation 2025 700,000 t/y Throughput          ***       16:59:42
                                                                                          PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                              *** THE SUMMARY OF MAXIMUM PERIOD ( 35088 HRS) RESULTS ***


                           ** CONC OF DPM      IN MICROGRAMS/M**3                    **

                                                                          NETWORK
GROUP ID                 AVERAGE CONC             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS      0.00412 AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC
        2ND HIGHEST VALUE IS      0.00208 AT (  323057.13,  3986554.18,   177.90,   470.00,    0.00)  DC
        3RD HIGHEST VALUE IS      0.00165 AT (  322908.04,  3986531.77,   176.83,   470.00,    0.00)  DC
        4TH HIGHEST VALUE IS      0.00126 AT (  322698.67,  3986533.61,   176.18,   470.00,    0.00)  DC
        5TH HIGHEST VALUE IS      0.00123 AT (  322915.84,  3986350.52,   168.37,   470.00,    0.00)  DC
        6TH HIGHEST VALUE IS      0.00093 AT (  322273.57,  3986734.04,   182.57,   470.00,    0.00)  DC
        7TH HIGHEST VALUE IS      0.00090 AT (  324184.95,  3985748.04,   259.49,   264.00,    0.00)  DC
        8TH HIGHEST VALUE IS      0.00090 AT (  322236.28,  3986734.04,   181.95,   470.00,    0.00)  DC
        9TH HIGHEST VALUE IS      0.00090 AT (  322230.18,  3986752.80,   182.13,   470.00,    0.00)  DC
       10TH HIGHEST VALUE IS      0.00078 AT (  322091.65,  3986729.98,   179.02,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** Annual DPM - MItigation 2025 700,000 t/y Throughput          ***       16:59:42
                                                                                          PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

                                 *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                           ** CONC OF DPM      IN MICROGRAMS/M**3                    **

                                      DATE                                  NETWORK
GROUP ID                 AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS      0.06000  ON 08022508: AT (  323704.08,  3986800.84,   172.80,   470.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  18081 ***   *** Deer Creek MIne Expansion Project REV3                    ***       07/21/19
 *** AERMET - VERSION  18081 ***   *** Annual DPM - MItigation 2025 700,000 t/y Throughput          ***       16:59:42
                                                                                          PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of          0 Fatal Error Message(s)
 A Total of          6 Warning Message(s)
 A Total of       7410 Informational Message(s)
```

A Total of 35088 Hours Were Processed

A Total of 6527 Calm Hours Identified

A Total of 883 Missing Hours Identified (2.52 Percent)

```
******** FATAL ERROR MESSAGES ********
         ***  NONE  ***

********   WARNING MESSAGES   ********
SO W320    673      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
SO W320    674      PPARM: Input Parameter May Be Out-of-Range for Parameter        VS
SO W320   1072      PPARM: Input Parameter May Be Out-of-Range for Parameter         VS
SO W320   1073      PPARM: Input Parameter May Be Out-of-Range for Parameter         VS
SO W320   1074      PPARM: Input Parameter May Be Out-of-Range for Parameter         VS
ME W187   1252      MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

*HARP - H 700K IN 2025\hra\DeerCreek700k_2025HRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_F	MMILK_RI	WATER_RI	FISH_RISK	CROP_RISI	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_I	EGG_RISK	1ST_DRIVE	2ND_DRIVI
1	ALL		324185	3985748	0.0009	9901	DieselExhF	8.87E-07	70YrCance	*	8.87E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
2	ALL		323704.1	3986801	0.00412	9901	DieselExhF	4.06E-06	70YrCance	*	4.06E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
3	ALL		324807.3	3986830	0.00067	9901	DieselExhF	6.61E-07	70YrCance	*	6.61E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
4	ALL		323244.8	3985681	0.00026	9901	DieselExhF	2.56E-07	70YrCance	*	2.56E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
5	ALL		323051.1	3985817	0.00031	9901	DieselExhF	3.06E-07	70YrCance	*	3.06E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
6	ALL		323057.1	3986554	0.00208	9901	DieselExhF	2.05E-06	70YrCance	*	2.05E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
7	ALL		322908	3986532	0.00165	9901	DieselExhF	1.63E-06	70YrCance	*	1.63E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
8	ALL		322915.8	3986351	0.00123	9901	DieselExhF	1.21E-06	70YrCance	*	1.21E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
9	ALL		321721.4	3986690	0.00057	9901	DieselExhF	5.62E-07	70YrCance	*	5.62E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
10	ALL		321528.8	3986641	0.00048	9901	DieselExhF	4.73E-07	70YrCance	*	4.73E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
11	ALL		321316.7	3986644	0.00042	9901	DieselExhF	4.14E-07	70YrCance	*	4.14E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
12	ALL		322083.9	3986708	0.00077	9901	DieselExhF	7.59E-07	70YrCance	*	7.59E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
13	ALL		322236.3	3986734	0.0009	9901	DieselExhF	8.87E-07	70YrCance	*	8.87E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
14	ALL		322273.6	3986734	0.00093	9901	DieselExhF	9.17E-07	70YrCance	*	9.17E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
15	ALL		322091.7	3986730	0.00078	9901	DieselExhF	7.69E-07	70YrCance	*	7.69E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
16	ALL		322230.2	3986753	0.0009	9901	DieselExhF	8.87E-07	70YrCance	*	8.87E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
17	ALL		322698.7	3986534	0.00126	9901	DieselExhF	1.24E-06	70YrCance	*	1.24E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	

ER

Appendix C: San Joaquin Valley Air Pollution Control District Amicus Brief on Friant Ranch Supreme Court Decision

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SUPREME COURT COPY

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

SUPREME COURT
FILED

APR 13 2015

Frank A. McGuire Clerk

Deputy

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

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APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

> Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent efforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality

conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a "serious nonattainment" area to come into attainment of health-based National Ambient Air Quality Standard ("NAAQS") for coarse particulate matter (PM10), an achievement made even more notable given the Valley's extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of "extreme" nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates "smog" and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to "offset" vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)[1], ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

---

[1] San Joaquin's incentive program has been so successful that through 2012, it has awarded over $ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. *See* SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) *available at* http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206%20Incentives.pdf.

Valley counties and cities that implement the California Environment Quality Act (CEQA).[2] In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.[3] Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.[4] For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.[5]

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

---

[2] *See, e.g.*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), *available at* http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

[3] Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

[4] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

[5] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).[6] The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

---

[6] CEQA does not require speculation. *See, e.g.*, *Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

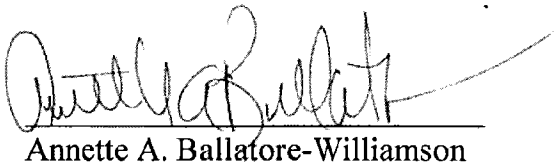
Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015



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SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL
DISTRICT

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Appendix F, pp. F-2 – F-5, available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted
_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).....6

San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0;
3.3.9; 4.14.1, available at:
http://www.valleyair.org/rules/currntrules/Rule22010411.pdf
(visited March 19, 2015).....7

*San Joaquin Valley Unified Air Pollution Control District Guide to
Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22,
available at:
http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan
%202002%20Rev.pdf (visited March 30, 2015).....7

San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20 Adopted%20_August%202000_.pdf (visited March 12, 2015).....8

San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan, Appendix B pp. B-6, B-9, available at: http://www.valleyair.org/Air_Quality_ Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April% 202007.pdf (visited March 12, 2015).....9

I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District ("Air District") respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report ("EIR") for the Friant Ranch development project was inadequate under the California Environmental Quality Act ("CEQA") because it did not include an analysis of the correlation between the project's criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as "TACs") regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health,

they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully

appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NOx) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.[1] Once formed, ozone can be transported long distances by wind.[2] Because of the complexity of ozone formation, a specific tonnage amount of NOx or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NOx or VOCs can have high levels of ozone concentration simply due to wind transport.[3] Conversely, the San Francisco Bay Area has six times more NOx and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

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[1] *See* United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: http://www.epa.gov/airquality/ozonepollution/basic.html (visited March 10, 2015).
[2] *Id.*
[3] *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.[4]

Particulate matter ("PM") can be divided into two categories: directly emitted PM and secondary PM.[5] While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.[6] Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SOx) and NOx.[7] Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NOx, SOx and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards ("NAAQS"), which are statutorily required to be set by the United States Environmental Protection

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[4] *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).
[5] United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: http://www.epa.gov/airquality/particlepollution/basic.html (visited March 10, 2015).
[6] *Id.*
[7] *Id.*

Agency ("EPA") at levels that are "requisite to protect the public health," 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.[8]

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.[9] Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District's tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NOx, SOx and VOCs) and the atmospheric chemistry and meteorology of the Valley.[10] At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

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[8] See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015).

[9] *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).

[10] *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM2.5 Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf
(visited March 19, 2015).

emissions Valley wide.[11] Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.[12]

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.[13] The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.[14] This "offset"

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[11] *Id.*

[12] Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. *See* San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: http://www.valleyair.org/rules/currntrules/Rule22010411.pdf (visited March 19, 2015).

[13] *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf (visited March 30, 2015).

[14] *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.[15] In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club*, *supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, "cumulative impacts."

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

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[15] [15] *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NOx inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.[16] Running the photochemical grid model used for predicting ozone attainment with the

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[16] *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9,
available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated

with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

> [t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)[17] The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)[18] The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

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[17] Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

[18] Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "'[T]he objections must be sufficiently specific so that the agency has the

opportunity to evaluate and respond to them.' [Citation.]" *Sierra Club v. City of Orange*,163 Cal.App.4th at 536.[19]

As discussed above, the City's comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since "[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action." *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal's decision requiring an analysis correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

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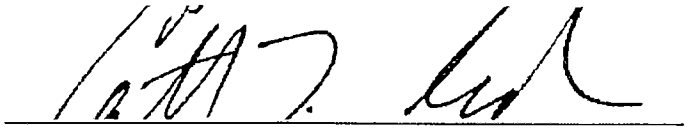
[19] *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or "piecemealed" the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as *"the use of a single document for both a project-level and a program-level EIR [is] 'confusing',"* and *"[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,"* were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015



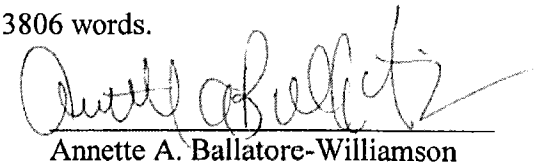
Catherine T. Redmond
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY
UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015



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District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a p[arty to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

(XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.

( ) **(BY ELECTRONIC MAIL)** I caused a true and correct scanned image (.PDF file) copy to be transmitted via electronic mail transfer system in place at the San Joaquin Valley Unified Air Pollution Control District ("District"), originating from the undersigned at 1990 E. Gettysburg Avenue, Fresno, CA, to the address(es) indicated below.

( ) **(BY OVERNIGHT MAIL)** I caused a true and correct copy to be delivered via Federal Express to the following person(s) or their representative at the address(es) listed below.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I executed this document on April 2, 2015, at Fresno, California.

Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

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APPENDIX "B"

BIOTIC EVALUATION

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LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

BIOTIC EVALUATION
DEER CREEK ROCK MINE EXPANSION PROJECT
TULARE COUNTY, CALIFORNIA

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May 23, 2019 File No. 1299-03

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EXECUTIVE SUMMARY

Live Oak Associates, Inc. conducted a biological study of the Deer Creek Rock Mine Expansion Project in Tulare County in order to assess the possible impacts to biological resources from the proposed expansion onto 20 adjoining acres east of the existing mine.

The project will entail the conversion of non-native grassland and citrus orchard occupying the expansion site to an open pit mine operation. The citrus orchard has been heavily disturbed from farming operations and contained no discernable vegetation, other than the orchard trees, during the field investigation. As a result, this area provides very limited habitat for native wildlife. The non-native grassland occupying the site provides significantly higher habitat value for native plants and animals.

Nesting birds could potentially be impacted by project construction. Preconstruction surveys will be conducted during the nesting season to ensure compliance with the Migratory Bird Treaty Act. Should active nests be found on the site, suitable construction free buffers will be established by a qualified biologist and maintained until the young have left the nest.

The project also has the potential to impact downstream waters from erosion of exposed soils during project implementation. Implementation of erosion control measures typically required by Tulare County as conditions of its grading permit and the Regional Water Quality Control Board as conditions of its General Construction Permit would reduce impacts to water quality in seasonal creeks, reservoirs and downstream drainages to a less than significant level.

Loss of habitat for special status animal species that may occasionally occur on the site is considered less than significant. Impacts associated with project development would also be less than significant for special status animals absent from or unlikely to use the project site, wildlife movement corridors, native wildlife nursery sites, waters of the U.S., and sensitive habitats. The project is not in conflict with local policies or habitat conservation plans.

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1.0 INTRODUCTION

This report describes the biotic resources of an approximately 20-acre property ("project site" or "site") proposed for expansion of a rock and gravel mine ("project") by the Deer Creek Rock Company, Inc. (Applicant), and assesses potential project-related impacts to those resources. Specifically, this report describes the biotic habitats of the project site, evaluates the suitability of each habitat for special status plant and animal species, identifies potentially significant impacts to sensitive biotic resources from the project and, where appropriate, proposes measures that if implemented would mitigate those impacts to a less than significant level.

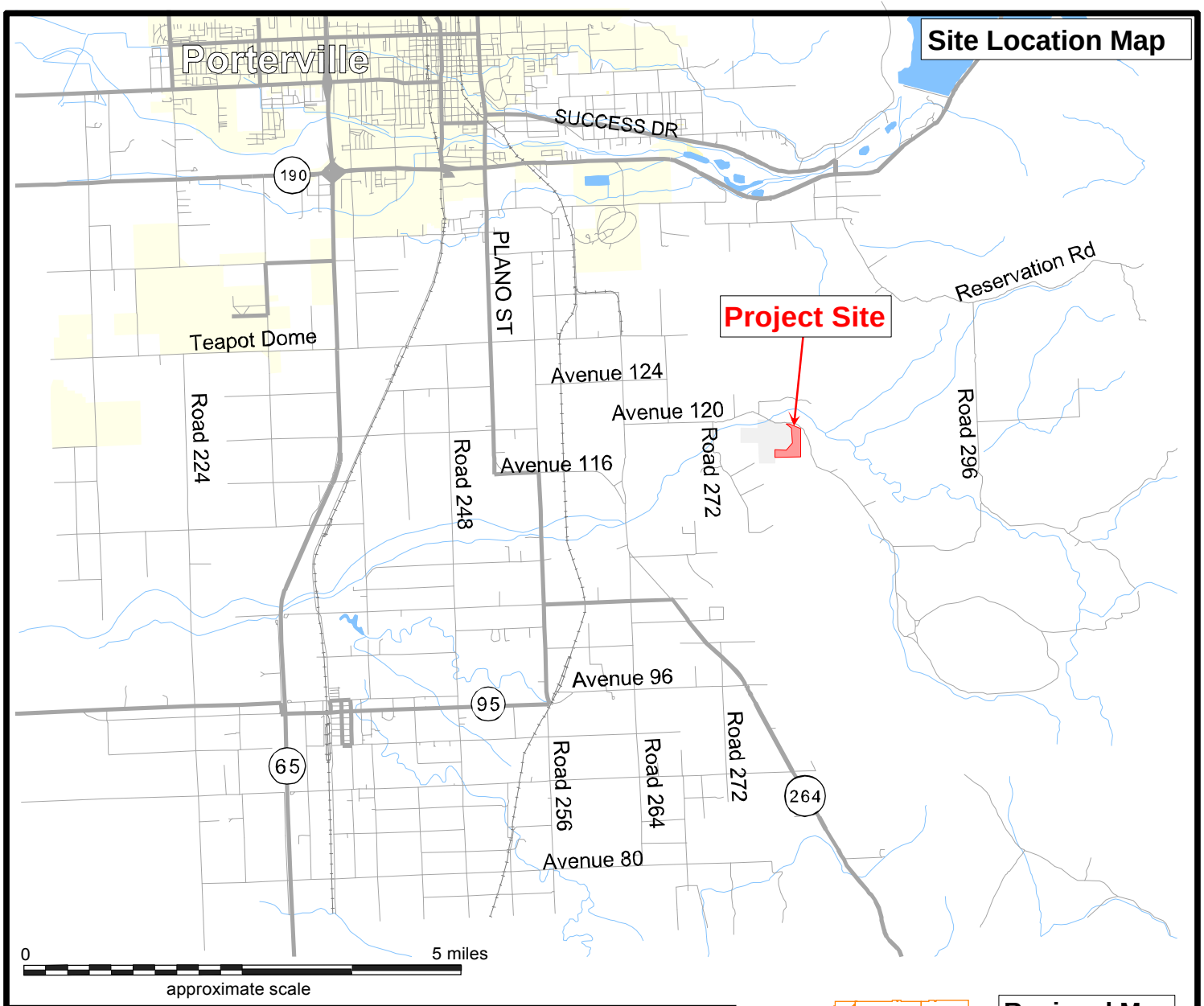
1.1 PROJECT LOCATION

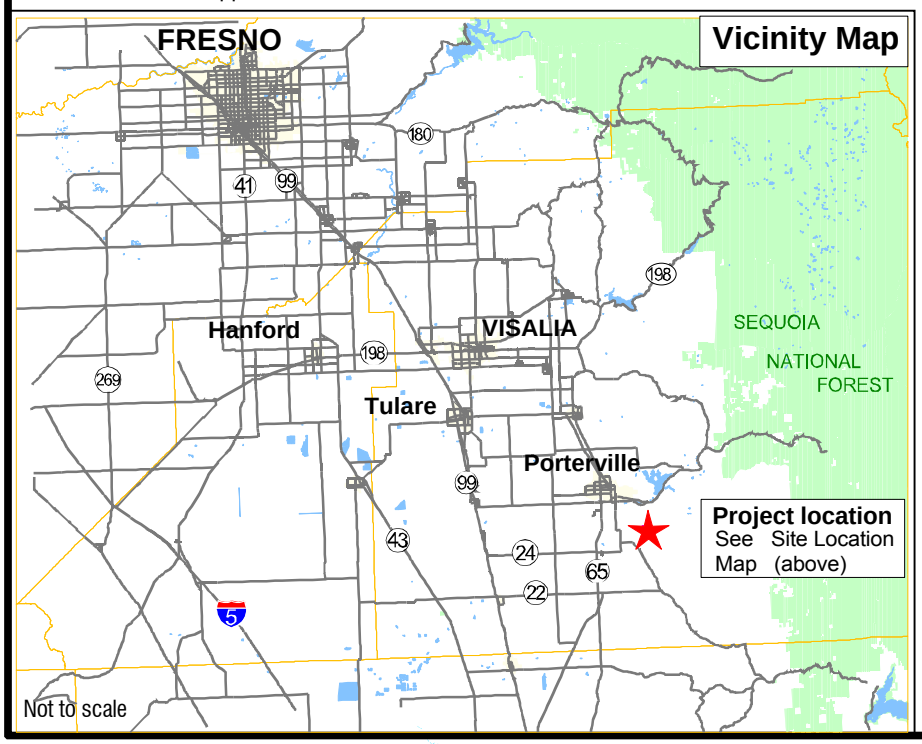
The project site, which is located in Tulare County approximately six miles southeast of the City of Porterville, can be found in the low foothills of the Sierra Nevada just south of Deer Creek (Figure 1). The site can be accessed via Avenue 120 (Deer Creek Road) immediately south of its crossing of Deer Creek. The site can be found on the U.S.G.S. Success Dam 7.5-minute quadrangle, Section 21, Township 22 South, Range 28 East (Figure 2).

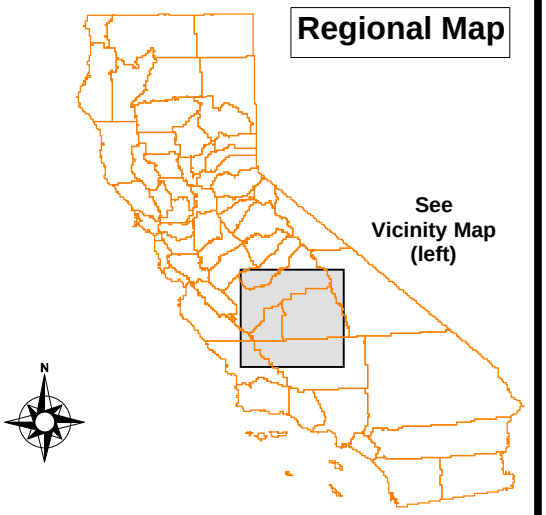
1.2 PROJECT DESCRIPTION

The Applicant currently operates a rock and gravel surface mining operation on 110 acres, as permitted by PMR 01-001, PMR 09-002, and PSP 01-055 (ZA), and PMR 14-002. The Applicant has requested approval of PMR 19-001, which will:

- Allow consistency between PMR 01-001, PMR 09-002, PSP 01-055(ZA), and PMR 14-002.
- Result in approximately 20-acre expansion upon land used for grazing and citrus production through the use of a lot line adjustment toward the east and southeast.
- Increase annual production by 500,000 tons per year (from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year).
- Increase truck hauling by 224 round trips per day (from a maximum of 376 round trips per day to a maximum of 600 round trips per day).
- Result in an increase in the maximum depth of the mine to 300 MSL.







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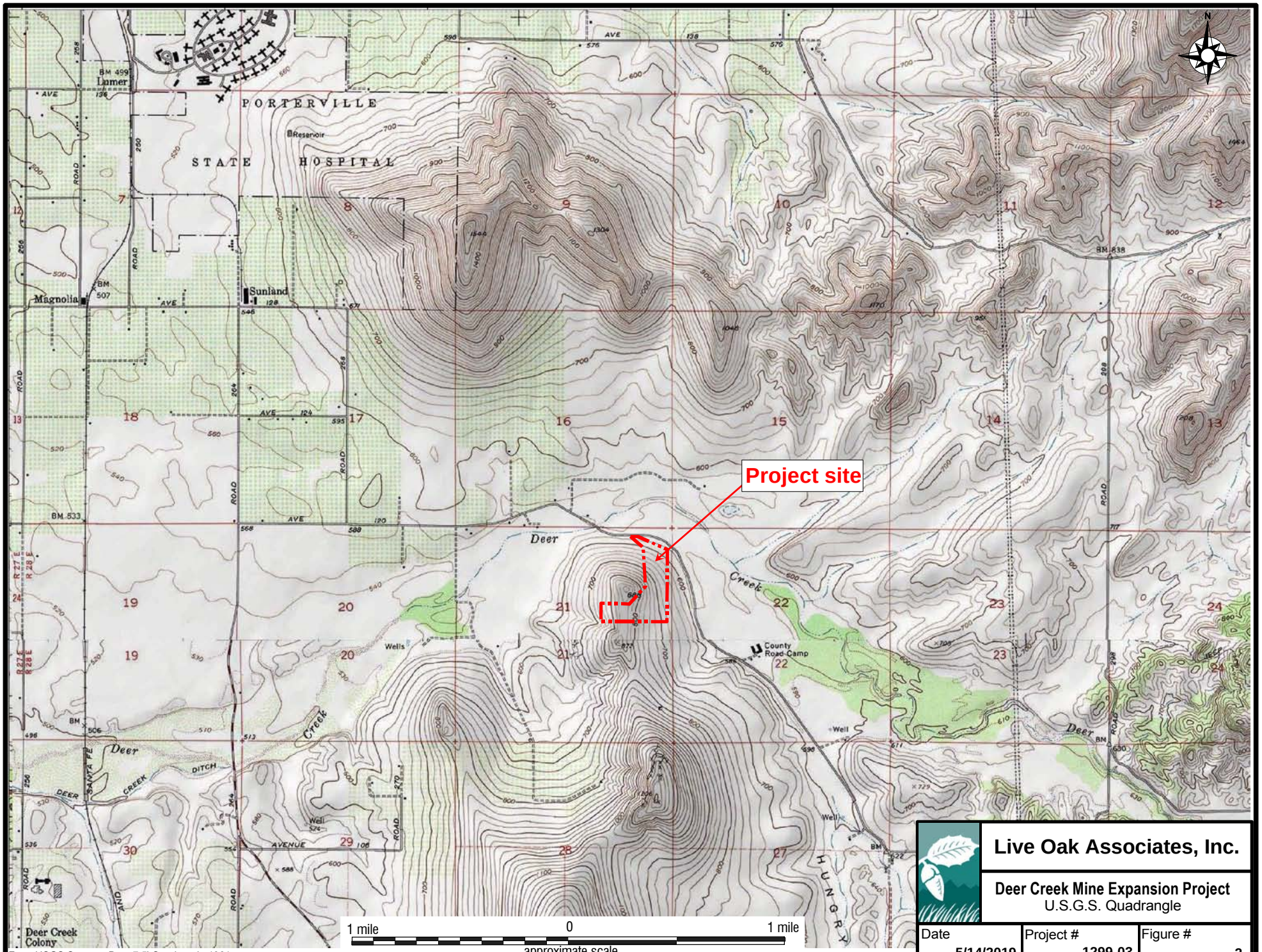
Deer Creek Mine Expansion Project
Site / Vicinity Map

Date	Project #	Figure #
5/14/2019	1299-03	1



From USGS Success Dam 7.5' Quadrangle 1961

Live Oak Associates, Inc.

Deer Creek Mine Expansion Project
U.S.G.S. Quadrangle

Date	Project #	Figure #
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- Result in a change to the estimated total rock production of 40,000,000 tons of rock to 75,000,000 tons of rock material during the estimated 50 years of operation.
- Result in no change to the approved reclamation plan other than to include the expanded area.

The current operation is transporting between 600,000 to 900,000 tons of aggregate annually, and the Applicant is requesting to increase its transporting to 1,500,000 tons of aggregate annually. Heavy-duty truck trips from the operation will be increased to a maximum of 60,000 trips per year (from the currently permitted 42,300 trips per year). The customer base from the proposed project is anticipated to remain mostly from within Tulare County.

The Applicant is proposing to increase production of the existing mining permit and will include both lateral and depth expansion. All proposed mining activities will take place within the proposed 20-acre expansion area. Proposed operation will continue blasting to break up larger rocks that cannot be moved or broken up by mechanical equipment. All blasting will be conducted by a licensed blaster.

As a condition of the permit, and since the proposed project is in the AE-40 and AE-10 zone, reclamation of the site will result in the property being reclaimed to grazing/open space standards for eventual agricultural re-use. A current approved Reclamation Plan is on file with Tulare County.

1.3 REPORT OBJECTIVES

Mining operations have the potential to damage or modify biological resources such as sensitive biotic habitats and the plant and wildlife species using them. In such cases, site development may be regulated by state or federal agencies, subject to provisions of the California Environmental Quality Act (CEQA) and/or the National Environmental Policy Act, and covered by policies of the County General Plan. This report addresses issues related to sensitive biotic resources occurring or potentially occurring on the project site. Accordingly, this report describes the existing environmental conditions of the site, assesses likely project impacts to biological resources, and proposes mitigation measures for those impacts meeting the CEQA definition of “significant.”

Therefore, the objectives of this report are as follows:

- To summarize all site-specific information related to existing biological resources;
- To make reasonable inferences about the biological resources that could occur on site based on habitat suitability and the proximity of the site to a species' known range;
- Summarize all state and federal natural resource protection laws that may be relevant to possible future site development;
- Identify and discuss project impacts to biological resources likely to occur on the site;
- Identify avoidance and other mitigation measures that would reduce any significant impact to biological resources of the project site to a less than significant level.

1.4 STUDY METHODOLOGY

The analysis of impacts, as discussed in Section 3.0 of this report, is based on the known and potential biotic resources of the project site (discussed in Section 2.0). Sources of information used in the preparation of this analysis include: (1) the *California Natural Diversity Data Base* (CDFW 2019); (2) the *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2019); (3) manuals, reports, and references related to plants and animals of the San Joaquin Valley region; and (4) other available planning documents and biological studies from the general project vicinity, including *Biotic Evaluation, Deer Creek Quarry Expansion Site, Tulare County, California* (LOA 2009) and *Biotic Evaluation, Amendment To Existing Mining Permits Per Application PMR 14-002, Deer Creek Rock Company, Tulare County, California* (LOA 2014). A field survey of the project site was conducted on April 11, 2019 by LOA biologists Jeff Gurule and Natalie Neff. The survey consisted of walking tight transects across the project site to ensure plant species were not missed. The surveyors noted principal land uses, and associated plant and animal species, and mapped habitat suitable for special status species and other sensitive biological resources.

2.0 EXISTING CONDITIONS

2.1 REGIONAL SETTING

The project site is located in the low foothills of the southern Sierra Nevada on the eastern edge of the Tulare Basin. Current land use in the region consists of urban areas such as the City of Porterville and the community of Terra Bella, and agricultural endeavors primarily in the form of citrus groves, and rangeland.

Like most of California, the Tulare Basin and lower Sierra foothills have a Mediterranean climate. Warm dry summers are followed by cool moist winters. Summer temperatures commonly exceed 90 to 100 degrees Fahrenheit, and the relative humidity is generally very low. Winter temperatures rarely rise much above 70 degrees Fahrenheit, with daytime highs often below 60 degrees Fahrenheit. Annual precipitation within the project site is about 11 inches, almost 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain.

The project site is adjacent to Deer Creek, which historically drained into Tulare Lake. This waterway was historically characterized by riparian, wetland, and aquatic ecosystems that supported large populations of diverse native plants and animals. Agricultural diversions and channel realignments downstream of the project site have eliminated much of the original riparian habitat of this creek, and aquatic and wetland habitats have been greatly degraded from agricultural runoff and diversions. Tulare Lake has long been drained and converted to farmland and urban uses.

Native plant and animal species once abundant in the region have become locally extirpated or have experienced large reductions in their populations due to conversion of upland, riparian, and aquatic habitats to agricultural and urban uses. Remaining native habitats are particularly valuable to native wildlife species including special status species that still persist in the region.

2.2 PROJECT SITE

The project site consists of non-native grassland and a citrus orchard. The project site is gently sloping with elevations ranging from approximately 570 to 860 feet National Geodetic Vertical

Datum (NGVD). The project site contains one soil mapping unit: Cibo-Rock outcrop complex, 15 to 50 percent slopes. This moderately deep well-drained soil has formed from weathered basic igneous rock. Small rock outcrops occurred in the upper elevations of the site, consisting of exposed hard gabbro. This soil mapping unit can contain inclusions of Centerville clay, Coarsegold loam, Las Posas loam, and Trabuco loam. During the field visit to the project site, a number of areas of Centerville clay were identifiable within the Cibo Rock Outcrop Complex. This soil mapping unit is not considered hydric, meaning it doesn't have the propensity to support seasonal pools that could provide habitat for sensitive plant or animal species. While soils of the site are mostly undisturbed, soils within the citrus orchard have been significantly disturbed by agricultural use of this area.

Surrounding land uses consist of the operating Deer Creek Rock Mine to the west, continuing citrus orchard to the south and open rangeland to the north and east.

2.3 LANDUSE TYPES/BIOTIC HABITATS

Land-use types/biotic habitats of the site comprise non-native grassland and orchard (Figure 3). A list of vascular plants identified on the site has been provided in Appendix B. A list of terrestrial vertebrates using or potentially using the project site has been provided in Appendix C.

2.3.1 Non-native Grassland

Non-native grassland occurs across most of the site. The grasses and forbs present in this habitat consist primarily of annuals of European origin. At the time of the field survey, annual grasses included ripgut brome (*Bromus diandrus*), soft-chess brome (*Bromus hordeaceous*), red brome (*Bromus madritensis ssp. rubens*), barnyard barley (*Hordeum murinum* ssp. *leporinum*), wild oats (*Avena fatua* and *A. barbata*), and rattail fescue (*Vulpia myuros*). Interspersed throughout the non-native grasses were a number of native and non-native forbs including broad-leaf filaree (*Erodium botrys*), rancher's fireweed (*Amsinckia intermedia*), bur clover (*Medicago polymorpha*), smooth cat's ear (*Hypochaeris glabra*), blow-wives (*Achyrachaena mollis*), bird's-eye gilia (*Gilia bicolor*), rusty popcornflower (*Plagiobothrys nothofulvus*), and common lomatium (*Lomatium utriculatum*). The small patchy areas of Centerville clay supported California plantain (*Plantago*

Aerial Photograph courtesy of
U.S.D.A. Aerial Photography Field Office 1/29/2019

LEGEND

- Non-native Grassland
- Orchard

1,000' 0 1,000 feet
approximate scale

Live Oak Associates, Inc.

Deer Creek Mine Expansion Project
Biotic Habitats

Date	Project #	Figure #
5/14/2019	1299-03	3

erecta), hogwallow starfish (*Hesperevax caulescens*), and pretty face (*Triteleia ixioides*). Rocky outcrops supported caterpillar phacelia (*Phacelia cicutaria*) and rattlesnake sandmat (*Euphorbia polycarpa*).

As the spring-flowering annuals set seed and die, summer annuals bloom and set seed. Two summer annuals observed during the survey were Heerman's tarweed (*Holocarpha heermanii*) and woolly milkweed (*Asclepias vestita*).

Grasslands of the site provide suitable habitat for a number of amphibians and reptiles. Amphibians such as western toads (*Anaxyrus boreas*) and Pacific chorus frogs (*Pseudacris regilla*) are likely to disperse into and through the non-native grasslands of the site during winter and spring. Common reptile species likely to use this habitat include common side-blotched lizard (*Uta stansburiana*), western whiptails (*Cnemidophorus tigris*), gopher snakes (*Pituophis melanoleucus*), common kingsnakes (*Lampropeltis getulus*), and western rattlesnakes (*Crotalus viridis*).

Numerous species of birds would use the site's grassland habitat for foraging, and some birds are also known to nest in grassland habitats. Resident birds using the grassland include mourning doves (*Zenaida macroura*), western meadowlarks (*Sternella neglecta*), Brewer's blackbirds (*Euphagus cyanocephalus*), and European starlings (*Sturnus vulgaris*). Common winter migrants attracted to grasslands of the region are savannah sparrows (*Passerculus sandwichensis*), American pipits (*Anthus rebescens*), and mountain bluebirds (*Sialia currucoides*). Summer migrants using the site's grassland for foraging would include western kingbirds (*Tyrannus verticalis*) and tree swallows (*Tachycineta bicolor*). Various raptors (birds of prey) would also be expected to forage within the grassland. These would include red-tailed hawks (*Buteo jamaicensis*), red-shouldered hawks (*Buteo lineatus*), and American kestrels (*Falco sparverius*), all of which could occur on the site throughout the year.

Although evidence of small mammal burrowing activity was absent from the site, a number of small mammal species associated with the grassland would provide a primary source of prey for various predators. Deer mice (*Peromyscus maniculatus*), California voles (*Microtus californicus*), and Botta's pocket gophers (*Thomomys bottae*) would all attract various snakes, raptors, and mammalian predators. Predators such as gray fox (*Urocyon cinereoargenteus*), coyote (*Canis*

latrans), and bobcats (*Lynx rufus*) are expected to forage in the site's grassland from time to time.

2.3.2 Orchard

The citrus orchard contains highly disturbed soils and no discernable understory vegetation. This highly disturbed landscape provides habitat of marginal quality for most native terrestrial vertebrates. Regular orchard maintenance and harvest activities create routine disturbance that greatly reduces the habitat value of the orchard. As a result, reptile, bird, and mammal use of this area would be minimal. At most, animals such as the common side-blotched lizard may be found along the margin of the orchard adjacent to grassland habitat. A few bird species such as the American robin (*Turdus migratorius*), northern mockingbird (*Mimus polyglottos*), and Brewer's blackbird could find limited foraging and nesting opportunity in the canopy of the orchard trees.

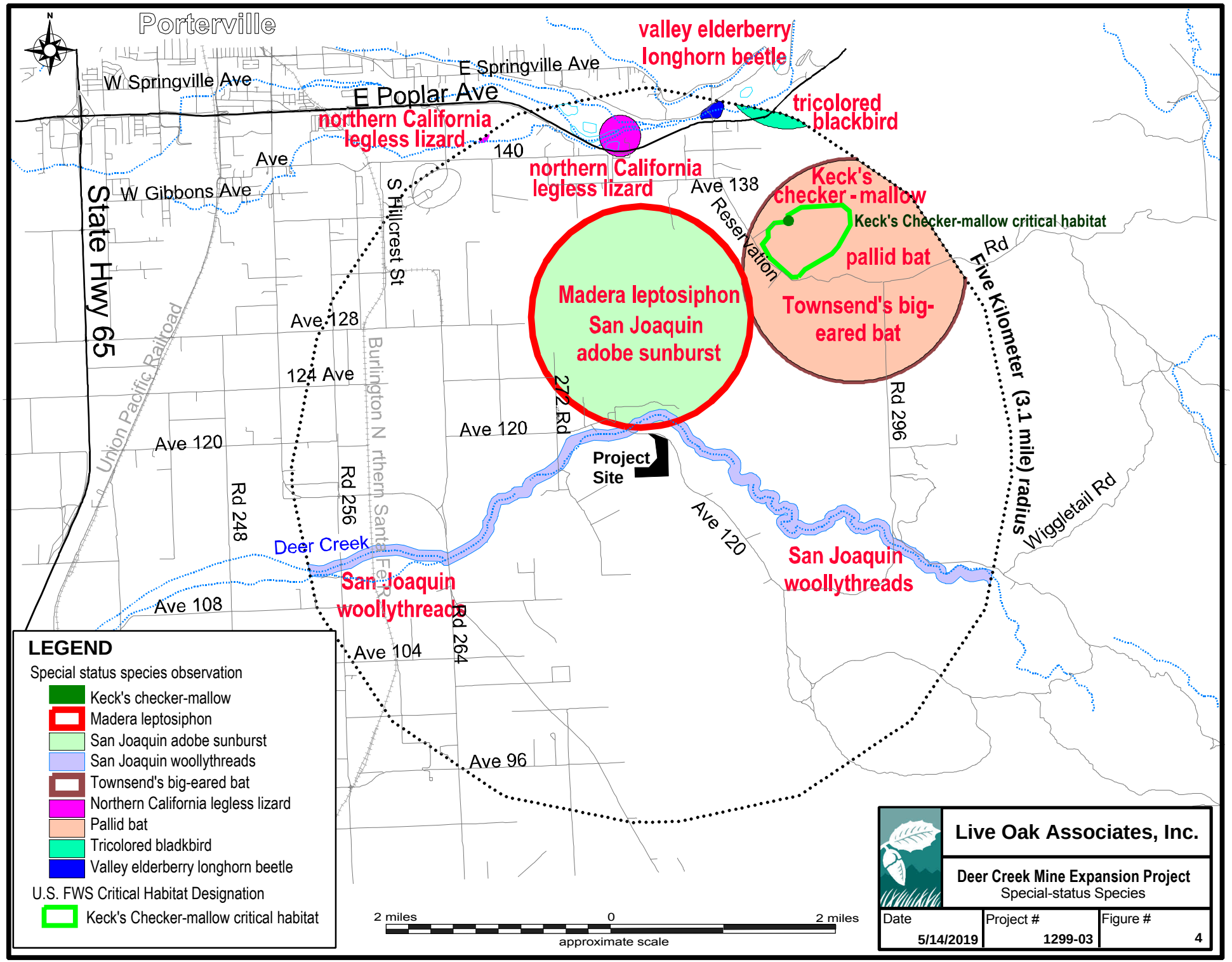
2.4 SPECIAL STATUS PLANTS AND ANIMALS

Several species of plants and animals within the state of California have low populations and/or limited distributions. Such species may be considered "rare" and are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described more fully in Section 3.2, state and federal laws have provided the CDFW and the USFWS with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened, or endangered (CNPS 2019). Collectively, these plants and animals are referred to as "special status species."

The California Natural Diversity Data Base (CNDDB) was queried for special status species occurrences in the nine USGS 7.5-minute quadrangles containing and immediately surrounding the project site (*Success Dam, Globe, Gibbon Peak, Fountain Springs, Ducor, Porterville, Lindsay, Frazier Valley,* and *Springville*). These species, and their potential to occur on the project site, are listed in Table 1 on the following pages. Sources of information for this table

included *California's Wildlife, Volumes I, II, and III* (Zeiner et. al 1988-1990), *California Natural Diversity Data Base* (CDFW 2019), *Endangered and Threatened Wildlife and Plants* (USFWS 2019), *The Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998), *The Jepson Manual: Vascular Plants of California, second edition* (Baldwin et al 2012), and *The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2019), Calflora.org, eBird.org, and various technical reports prepared by LOA for the Deer Creek Rock Mine.

Special status species occurrences within 5 kilometers of the project site are depicted in Figure 4 and San Joaquin kit fox (*Vulpes macrotis mutica*) occurrences within 10 miles are presented in Figure 5.


Porterville
W Springville Ave
E Springville Ave
E Poplar Ave
valley elderberry longhorn beetle
tricolored blackbird
northern California legless lizard
northern California legless lizard
Keck's checker-mallow
Keck's Checker-mallow critical habitat
pallid bat
Townsend's big-eared bat
Madera leptosiphon
San Joaquin adobe sunburst
Project Site
San Joaquin woollythreads
San Joaquin woollythreads
Deer Creek
State Hwy 65
Union Pacific Railroad
Burlington Northern Santa Fe RR
S Hillcrest St
W Gibbons Ave
Ave 140
Ave 138
Reservation
Ave 128
124 Ave
Ave 120
Ave 120
Ave 120
Ave 108
Ave 104
Ave 96
Rd 248
Rd 256
Rd 264
272 Rd
Rd 296
Five Kilometer (3.1 mile) radius
Wiggletail Rd
2 miles
0
2 miles
approximate scale
LEGEND
Special status species observation
Keck's checker-mallow
Madera leptosiphon
San Joaquin adobe sunburst
San Joaquin woollythreads
Townsend's big-eared bat
Northern California legless lizard
Pallid bat
Tricolored bladkbird
Valley elderberry longhorn beetle
U.S. FWS Critical Habitat Designation
Keck's Checker-mallow critical habitat
Live Oak Associates, Inc.
Deer Creek Mine Expansion Project
Special-status Species
Date 5/14/2019
Project # 1299-03
Figure # 4

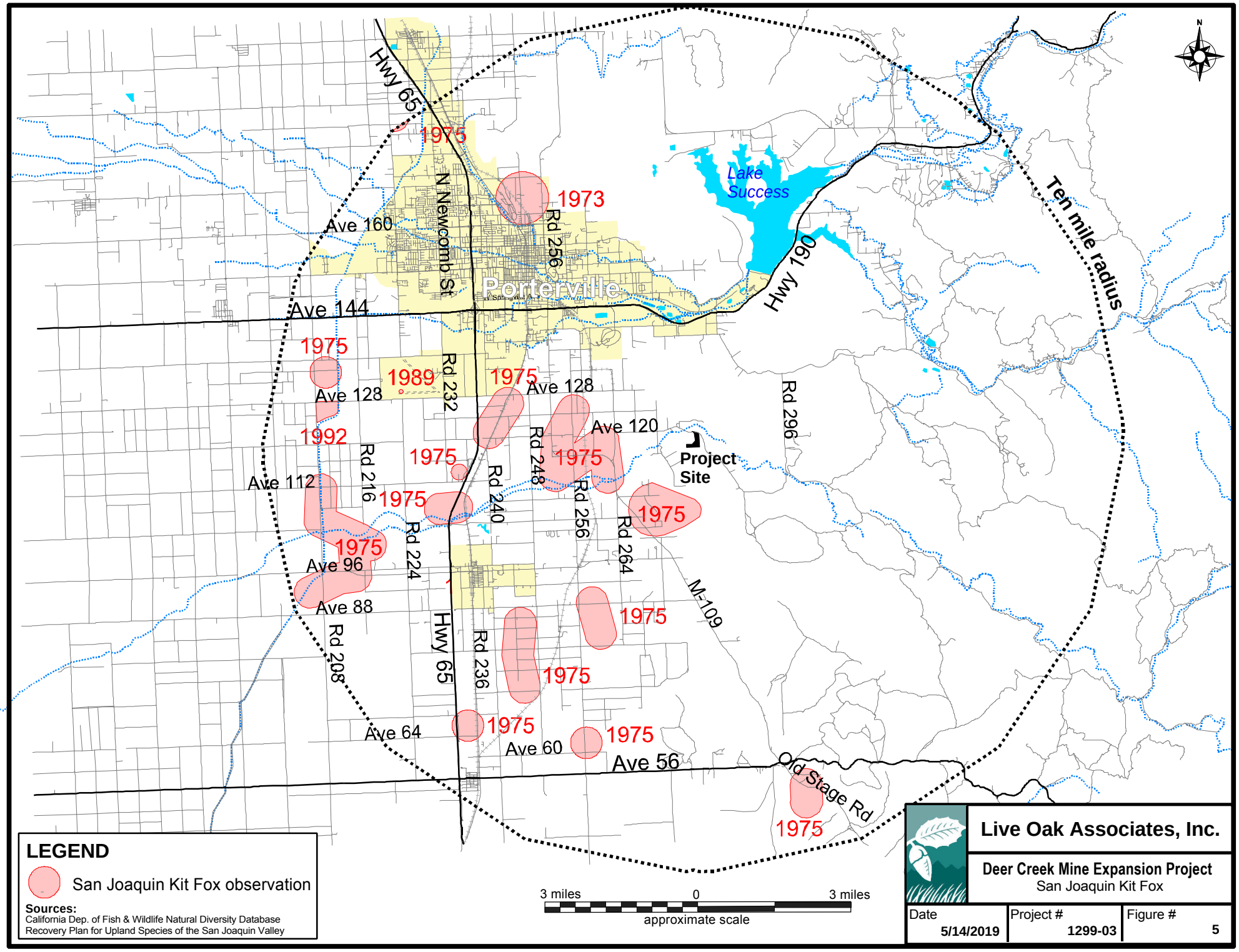

Hwy 65
N Newcomb St
Porterville
Lake Success
Hwy 190
Ten mile radius
Ave 160
Ave 144
Ave 128
Ave 120
Ave 112
Ave 96
Ave 88
Ave 64
Ave 60
Ave 56
Rd 256
Rd 232
Rd 216
Rd 248
Rd 240
Rd 256
Rd 264
Rd 224
Rd 208
Rd 236
Rd 296
M-109
Old Stage Rd
Project Site
1975
1973
1989
1992
LEGEND
San Joaquin Kit Fox observation
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
Recovery Plan for Upland Species of the San Joaquin Valley
3 miles
0
3 miles
approximate scale
Live Oak Associates, Inc.
Deer Creek Mine Expansion Project
San Joaquin Kit Fox
Date
5/14/2019
Project #
1299-03
Figure #
5

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS (adapted from CDFW 2019 and CNPS 2019)
Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	Occurrence on the Project site
Kaweah Brodiaea (*Brodiaea insignis*)	CE, CNPS 1B	Cismontane Woodland, Valley and Foothill Grassland with granitic and/or clay soils at elevations of 560-4,600 ft. Blooms April-June.	**Unlikely.** This species was not observed during spring surveys of the site. The closest occurrences of this species are approx. 17 miles to the northeast at much higher elevations than the project site (CDFW 2019).
Springville Clarkia (*Clarkia springvillensis*)	FT CNPS 1B	Occurs in granitic soils of cismontane and grassland habitats of the Tule River watershed at elevations above 1,000 feet.	**Absent.** The project site is below the elevational range of the species.
San Joaquin Woollythreads (*Monolopia congdonii*)	FE, CNPS 1B	Occurs in chenopod scrub and valley and foothill grassland, often on sandy soils at elevations of 200-2,600 ft. Blooms: February–May.	**Absent.** Sandy soils preferred by this species are absent from the site. The site is also well outside the current known range of the species. The nearest documented occurrence is from 1881 along Deer Creek with the exact location unknown (CDFW 2019).
Striped Adobe Lily (*Fritillaria striata*)	CE CNPS 1B	Cismontane woodland, valley and foothill grassland, in heavy clay soils of Centerville and Porterville Series. Blooms: February–April.	**Absent.** Patchy Centerville clay soils appear to be present on the site, but striped adobe-lily was not observed during the 2019 field survey at a time when the flowers and/or conspicuous seedpods would have been visible.
San Joaquin Adobe Sunburst (*Pseudobahia peirsonii*)	FT, CE, CNPS 1B	This annual sunflower occurs in grasslands of the Sierra Nevada foothills in heavy clay soils of the Porterville and Centerville series at elevation of 300-2,625 ft. Blooms March-April.	**Absent.** Patchy Centerville clay soils appear to be present on the site, but San Joaquin adobe sunburst was not observed during the 2019 field survey at a time when this species would have been visible.
Keck's Checkerbloom (*Sidalcea keckii*)	FE, CNPS 1B	Mixed oak woodland and non-native grassland of southern Sierra foothills at elevations between 250 and 2,100 feet. Blooms April-May. This species has been documented in Centerville clay soils approx. two miles northeast of the site (CDFW 2019) .	**Absent.** Patchy Centerville clay soils appear to be present on the site, but Keck's checkerbloom was not observed during the 2019 field survey at a time when it should have been visible and identifiable.

CNPS Listed Plants

Abrams' Onion (*Allium abramsii*)	CNPS 1B	Occurs in montane coniferous forest on sandy soils derived from disintegrated granite between 2,900-10,000 ft. in elevation.	**Absent.** Suitable habitat in the form of sandy soils in forest openings are absent from the project site. The site is well outside the range of the species.
Munz's Iris (*Iris munzii*)	CNPS 1B	Cismontane woodland in granitic moist sandy loam soils, often along streams granite between 1,100-2,500 ft. in elevation..	**Absent.** Suitable habitat is absent from the project site. The site is outside the elevational range of the species.
Rose-flowered Larkspur (*Delphinium purpusii*)	CNPS 1B	Occurs on shady rocky slopes; often on carbonates within chaparral, cismontane woodland, pinyon and juniper woodland; blooms April-May at 755 – 7,000 ft. in elevation	**Absent.** Suitable habitat for this species is absent from the project site. The site is outside the elevational range of the species.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS (cont'd)

CNPS Listed Plants

Species	Status	Habitat	Occurrence on the Project site
Recurved Larkspur (*Delphinium recurvatum*)	CNPS 1B	Occurs in alkaline soils of cismontane woodland and valley and foothill grasslands at elevations below 2,500 ft.; Blooms March-June.	**Absent.** Alkali soils in which this species is typically found are absent from the project site. Furthermore, no *Delphinium* species were observed on the site during the spring survey.
Spiny-Sepaled Button-Celery (*Eryngium spinosepalum*)	CNPS 1B	This species occurs in vernal pools, as well as moist swales and seeps within valley and foothill grasslands; Blooms April-May; elevation 330-840 ft.	**Absent.** Suitable habitat for this species is absent from the project site. Furthermore, no *Eryngium* species were observed during the spring survey.
Madera Leptosiphon (*Leptosiphon serulatus*)	CNPS 1B	Occurs in cismontane woodland and lower montane coniferous forests at approx. 1,000-4,270 ft. in elevation. Blooms April-May.	**Unlikely.** Although a 1935 collection is reported in the CNDDB only a mile north of the project site, the current known range of this species is at elevations higher than the project site in wooded habitats. Furthermore, Madera leptosiphon was not observed during the 2019 field survey at a time when it should have been visible and identifiable.
Calico MonkeyFlower (*Mimulus pictus*)	CNPS 1B	Occurs in broadleaf upland forest and cismontane woodland in granitic soils, often at the edge of granite outcrops at 330-4270 ft. in elevation. Blooms March-May.	**Absent.** Suitable habitat for this species is absent from the project site. Furthermore, this species was not observed on the site during the spring survey.
Shining Navarretia (*Navarretia nigelliformis ssp. radians*)	CNPS 1B	Occurs in cismontane woodland, valley and foothill grassland, and vernal pools at 200-3200 ft. in elevation. Blooms April-July.	**Unlikely.** No *Navarretia* species were observed during the site survey at a time this species should have been visible. A related subspecies, Adobe navarretia (*Navarretia nigelliformis ssp. nigelliformis*), was observed on the existing mine area by LOA on April 2, 2009 and July 23, 2014. The closest known occurrence of shining navarretia is approximately 5 miles northwest of the project site, recorded in 2016. Until that time, this species was not known to occur in the southern San Joaquin Valley or the Valley's eastern foothills; the next nearest population is located 76 miles southwest of the project site in the Coast Range.
Chaparral Ragwort (*Senecio aphanactis*)	CNPS 2B	Occurs in drying alkaline flats within chaparral, cismontane woodland, and coastal scrub. Blooms January-April; elevation 65-2800 ft.	**Absent.** Suitable habitat for this species is absent from the project site.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS (adapted from CDFW 2019)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence on the Project Site
Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)	FT	Primarily found in vernal pools; may use other seasonal wetlands.	**Absent**. Vernal pool habitat required by this species is absent from the project site.
Foothill Yellow-legged Frog (*Rana boylii*)	CCT, CSC	Occurs in fast-moving rivers and creeks with cobble bottoms within the Sierra foothills.	**Absent.** Habitat in which this species occurs is absent from the project site.
California Condor (*Gymnogyps californianus*)	FE, CE	Nests on rocky cliffs and forages over vast areas of grassland.	**Absent.** Nesting and roosting habitat is absent from the project site. The small amount of rangeland found on the site would not be used by foraging condors due to the general absence of carrion and the proximity of the site to an active mine.
Tricolored Blackbird (*Agelaius tricolor*)	CCE	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in nearby grassland and cropland habitats.	**Possible.** Suitable breeding habitat is absent from the project site. However, this species may occasionally forage on the site.
California Wolverine (*Gulo gulo*)	FPT, CT	Found in the north coast mountains and the Sierra Nevada. Found in a wide variety of high elevation habitats.	**Absent.** The project site is well below this species' elevational range.
San Joaquin Kit Fox (*Vulpes macrotis mutica*)	FT, CE	Annual grasslands and alkali sink scrub of California's southern Central Valley and Inner Coast Range.	**Unlikely.** While the site's grassland represents potentially suitable habitat for the kit fox, its value for this species is somewhat reduced by the absence of small mammal burrows, which may signify a shortage of rodent prey and reduced denning opportunities. Kit fox in the southern San Joaquin Valley generally modify the burrows of California ground squirrels and other small mammals for denning. Furthermore, there are no currently known populations of San Joaquin kit fox in Tulare County (Smith et al. 2006) and kit fox have not been documented in the immediate project vicinity for nearly 40 years (see Fig. 5).

California Species of Special Concern

Western Pond Turtle (*Emys marmorata*)	CSC	Open slow moving water of rivers and creeks of central Calif. with rocks and logs for basking. Typically nests in loose soil proximate to aquatic habitat.	**Absent.** Suitable habitat for this species is absent from the project site and immediately surrounding lands.
Northern California Legless Lizard (*Anniella pulchra*)	CSC	Moist sandy or loose loamy soils under sparse vegetation.	**Absent.** The project site provides unsuitable habitat for this species. Sandy or loose soils are absent from the site.

TABLE 1. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS (adapted from CDFW 2019)

California Species of Special Concern (cont.)

Species	Status	Habitat	*Occurrence on the Project Site
Burrowing Owl (*Athene cunicularia*)	CSC	Found in open, dry grasslands, deserts and ruderal areas. Requires suitable burrows.	**Absent.** Suitable denning and roosting habitat in the form of ground squirrel burrows was absent from the site. This species is not known to occur in the project vicinity (CDFW 2019, eBird 2019).
Golden Eagle (*Aquila chrysaetos*)	CSC	Open grasslands, oak savannahs agricultural fields, etc. of San Joaquin Valley and nearby foothills of Inner Coast Range.	**Possible.** The site provides suitable foraging habitat for this species. Nesting habitat is absent.
Loggerhead Shrike (*Lanius ludovicianus*)	CSC	This species is found in open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches	**Possible.** The site provides suitable foraging habitat for this species. Due to regular farming practices, the orchard provides extremely marginal nesting habitat, at best. This species would not be expected to nest on site.
Black Swift (*Cypseloides niger*)	CSC	Migrants and transients found throughout many habitats of state; in Sierra nests are usually associated with waterfalls from 4,000-7,000 ft.	**Possible.** The site provides suitable foraging habitat for migrants. Nesting habitat is absent.
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	CSC	Primarily a cave-dwelling bat, which may also roost in buildings. Occurs in a variety of habitats.	**Possible.** This species may forage over the site. Roosting habitat is absent.
Western Mastiff Bat (*Eumops perotis*)	CSC	Frequents grasslands to woodland habitats along the central and southern coast and the Central Valley; requires high buildings, cliff faces, caves or tunnels for roosting and nesting.	**Possible.** This species may forage over the site. Roosting habitat is absent.
Pallid Bat (*Antrozous pallidus*)	CSC	Grasslands, chaparral, woodlands, and forests of California; most common in dry rocky open areas providing roosting opportunities. May also use hollow trees for roosting.	**Possible.** This species may forage over the site. Roosting habitat is absent.
American Badger (*Taxidea taxus*)	CSC	In the Sierra this species inhabits open and dry sections of shrub, forest and herbaceous habitats with friable soil.	**Unlikely.** The project site provides marginal habitat for this species due to the prevalence of clay soils, which would make it difficult, if not impossible, for badgers to excavate the dens they use for sleeping and breeding. Moreover, while badgers take a variety of prey, they rely most heavily on fossorial rodents, for which no evidence was found on site.

EXPLANATION OF OCCURRENCE DESIGNATIONS AND STATUS CODES

Present:	Species observed on the site at time of field surveys or during recent past
Likely:	Species not observed on the site, but it may reasonably be expected to occur there on a regular basis
Possible:	Species not observed on the site, but it could occur there from time to time
Unlikely:	Species not observed on the site, and would not be expected to occur there except, perhaps, as a transient
Absent:	Species not observed on the site, and precluded from occurring there due to absence of suitable habitat

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CCE	California Endangered (Candidate)
FPT	Federally Threatened (Proposed)	CFP	California Fully Protected
FC	Federal Candidate	CSC	California Species of Special Concern

CNPS LISTING

1A	Plants Presumed Extinct in California	2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere
1B	Plants Rare, Threatened, or Endangered in California and elsewhere		

2.5 JURISDICTIONAL WATERS

Jurisdictional waters include rivers, creeks, and drainages that have a defined bed and bank and which, at the very least, carry ephemeral flows. Jurisdictional waters also include lakes, ponds, reservoirs, and wetlands. Such waters may be subject to the regulatory authority of the USACE, the CDFW, and the California Regional Water Quality Control Board (RWQCB). See Section 3.2.5 of this report for additional information.

The project site contains no hydrologic features. As a result, jurisdictional waters are absent from the project site.

2.6 NATURAL COMMUNITIES OF SPECIAL CONCERN

Natural communities of special concern are those that are of limited distribution, distinguished by significant biological diversity, home to special status plant and animal species, of importance in maintaining water quality or sustaining flows, etc. Examples of natural communities of special concern include various types of wetlands and riparian habitat.

Natural communities of special concern are absent from the project area.

2.7 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and inter-population movements. Movement corridors in California are typically associated with valleys, rivers and creeks supporting riparian vegetation, and ridgelines.

The project area does not contain features that would function as wildlife movement corridor. However, the Pacific flyway, one of four major bird migration routes in North America, passes over the project area and much of the rest of California.

2.8 DESIGNATED CRITICAL HABITAT

The USFWS often designates areas of "critical habitat" when it lists species as threatened or endangered. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

Designated critical habitat is absent from the project area.

3.0 IMPACTS AND MITIGATIONS

3.1 SIGNIFICANCE CRITERIA

Approval of general plans, area plans, and specific projects is subject to the provisions of CEQA. The purpose of CEQA is to assess the impacts of proposed projects on the environment before they are carried out. CEQA is concerned with the significance of a proposed project's impacts. For example, a proposed development project may require the removal of some or all of a site's existing vegetation. Animals associated with this vegetation could be destroyed or displaced. Animals adapted to humans, roads, buildings, pets, etc., may replace those species formerly occurring on the site. Plants and animals that are state and/or federally listed as threatened or endangered may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed.

Whenever possible, public agencies are required to avoid or minimize environmental impacts by implementing practical alternatives or mitigation measures. According to Section 15382 of the CEQA Guidelines, a significant effect on the environment means a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest."

Specific project impacts to biological resources may be considered "significant" if they would:

- 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 Wildlife or U.S. Fish and Wildlife Service.

- 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.

- 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.

- 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.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Furthermore, CEQA Guidelines Section 15065(a) states that a project may trigger the requirement to make "mandatory findings of significance" if the project has the potential to:

> "Substantially 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 an endangered, rare or threatened species, or eliminate important examples of the major periods of California history or prehistory."

3.2 RELEVANT GOALS, POLICIES, AND LAWS

3.2.1 General Plan Policies of County of Tulare

In compliance with CEQA, the lead agency considers conformance with applicable goals and policies of the General Plans of the County of Tulare. The Tulare County General Plan released an update in 2003 that is valid through 2030. Implementation of goals in the Tulare County General Plan is accomplished via a set of policies specific to each goal.

Relevant biological resource goals of the Tulare County General Plan include:

- protecting rare and endangered species;

- limiting development in environmentally sensitive areas;

- encouraging cluster development in areas with moderate to high potential for sensitive habitat;

- protecting riparian areas though habitat preservation, designation as open space or recreational land uses, bank stabilization and development controls;
- requiring mining reclamation plans and other management plans to include measures to protect, maintain and restore riparian resources and habitats;
- supporting the preservation and management of wetland and riparian plant communities for passive recreation, groundwater recharge, and wildlife habitats;
- encouraging the planting of native trees, shrubs, and grasslands preserve;
- requiring open space buffers between development projects and significant watercourse, riparian vegetation, wetlands, and other sensitive habitats and natural communities;
- coordinating with other government land management agencies to preserve and protect biological resources;
- encouraging appropriate access to resource-managed lands;
- providing opportunities for hunting and fishing activities;
- supporting the conservation and management of oak woodland communities and their habitats;
- implementing pesticide controls to limit effects on natural resources; and
- supporting the establishment and administration of a mitigation banking program.

No habitat conservation plans (HCPs) occur in this part of Tulare County.

3.2.2 Threatened and Endangered Species

In California, imperiled plants and animals may be afforded special legal protections under the California Endangered Species Act (CESA) and/or Federal Endangered Species Act (FESA). Species may be listed as “threatened” or “endangered” under one or both Acts, and/or as “rare” under CESA. Under both Acts, “endangered” means a species is in danger of extinction

throughout all or a significant portion of its range, and "threatened" means a species is likely to become endangered within the foreseeable future. Under CESA, "rare" means a species may become endangered if their present environment worsens. Both Acts prohibit "take" of listed species, defined under CESA as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86), and more broadly defined under FESA to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3).

When federally listed species have the potential to be impacted by a project, the USFWS must be included in the CEQA process. The USFWS reviews the environmental document to determine the adequacy of its treatment of endangered species issues and to make project-specific recommendations for the protection of listed species. Projects that may result in the "take" of listed species generally require consultation with the USFWS and/or CDFW pursuant to FESA and CESA, respectively. In some cases, incidental take authorization(s) from these agencies may be required before the project can be implemented.

3.2.3 Migratory Birds

The Federal Migratory Bird Treaty Act (FMBTA: 16 USC 703-712) prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it actually covers almost all birds native to the United States, even those that are non-migratory. The FMBTA encompasses whole birds, parts of birds, and bird nests and eggs.

Although the USFWS and its parent administration, the U.S. Department of the Interior, have traditionally interpreted the FMBTA as prohibiting incidental as well as intentional "take" of birds, a January 2018 legal opinion issued by the Department of the Interior now states that incidental take of migratory birds while engaging in otherwise lawful activities is permissible under the FMBTA. However, California Fish and Game Code makes it unlawful to take or possess any non-game bird covered by the FMBTA (Section 3513), as well as any other native non-game bird (Section 3800), even if incidental to lawful activities.

3.2.4 Birds of Prey

Birds of prey are protected in California under provisions of the Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the federal Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs.

3.2.5 Wetlands and Other "Jurisdictional Waters"

Section 404 of the federal Clean Water Act (CWA) regulates the discharge of dredged or fill material into "navigable waters" (33 U.S.C. §1344), which the CWA defines as "the waters of the United States, including the territorial seas" (33 U.S.C. §1362(7)). The CWA does not provide a definition for waters of the U.S., and that has been the subject of considerable debate since the Act's passage in 1972. A variety of regulatory definitions have been promulgated by the two federal agencies responsible for implementing the CWA, the Environmental Protection Agency (EPA) and USACE. These definitions have been interpreted, and in some cases, invalidated, by federal courts.

In 2015, the EPA and USACE jointly issued the Clean Water Rule (CWR), providing a synthesized definition of waters of the U.S. based on statute, science, and federal court decisions to date. Subsequent litigation delayed implementation of the CWR. However, in August 2018, the CWR was enjoined in 22 states including California.

The CWR defines waters of the U.S. to include the following:

> **(a)(1) Waters:** All waters used in interstate or foreign commerce (also known as traditional navigable waters), including all waters subject to the ebb and flow of the tide;
>
> **(a)(2) Waters:** All interstate waters including interstate wetlands;
>
> **(a)(3) Waters:** The territorial seas;
>
> **(a)(4) Waters:** All impoundments of Waters of the U.S.;
>
> **(a)(5) Waters:** All tributaries of (a)(1)-(a)(4) waters, where "tributary" refers to a water (natural or constructed) that contributes flow to another water and is

characterized by the physical indicators of a bed and bank and an ordinary high water (OHW) mark;

(a)(6) Waters: Adjacent waters, defined as either (a) located in whole or in part within 100 feet of the OHW mark of (a)(1)-(a)(5) waters, or (b) located in whole or in part within the 100-year floodplain and within 1,500 feet of the OHW mark of (a)(1)-(a)(5) waters;

(a)(7) Waters: Western vernal pools, prairie potholes, Carolina bays and Delmarva bays, pocosins, and Texas coastal prairie wetlands, if determined on a case-specific basis to have a significant nexus to (a)(1)-(a)(3) waters;

(a)(8) Waters: Waters that do not meet the definition of adjacency, but are determined on a case-specific basis to have a significant nexus to (a)(1)-(a)(3) waters, and are either located in whole or in part within the 100-year floodplain of (a)(1)-(a)(3) waters, or located within 4,000 feet of the OHW mark of (a)(1)-(a)(5) waters.

The CWR also redefines exclusions from jurisdiction, which include:

(b)(1) Waters: Waste treatment systems;

(b)(2) Waters: Prior converted cropland;

(b)(3) Waters: Three types of ditches. A ditch may be a water of the U.S. only it if meets the definition of "tributary" and is not otherwise excluded under the provisions below.

(i) Ditches with ephemeral flow that are not a relocated or excavated tributary;
(ii) Ditches with intermittent flow that are not a relocated or excavated tributary or that do not drain wetlands;
(iii) Ditches that do not flow, either directly or through another water, to an (a)(1)-(a)(3) water.

(b)(4) Waters: Other aquatic features:

- Artificially irrigated areas that would <u>revert to dry land</u> should application of irrigation water to that area cease.

- Artificially constructed lakes or ponds <u>created in dry land</u> such as farm and stock watering ponds, irrigation ponds, settling basins, log cleaning ponds, cooling ponds, or fields flooded for rice growing.

- Artificial reflecting pools or swimming pools <u>created in dry land</u>.

- Small ornamental waters <u>created in dry land</u> for primarily aesthetic reasons.

- Water-filled depressions created in dry land incidental to mining or construction activity, including pits excavated for obtaining fill, sand or gravel that fill with water.

- Erosional features, including gullies, rills and other ephemeral features that do not meet the definition of a tributary; non-wetland swales; and lawfully constructed grassed waterways.

- Puddles.

(b)(5) Waters: Groundwater and artificially constructed subsurface drainage systems in dry land;

(b)(6) Waters: Stormwater control features constructed to convey, treat, or store stormwater created in dry land. Does not include features that possess perennial flow, even if constructed in dry land.

All activities that involve the discharge of dredge or fill material into waters of the U.S. are subject to Section 404 permit requirements of the USACE. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the RWQCB issues a Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards.

Under the Porter-Cologne Water Quality Control Act of 1969, the State Water Resources Control Board has regulatory authority to protect the water quality of all surface water and groundwater in the State of California ("Waters of the State"). Nine RWQCBs oversee water quality at the local and regional level. The RWQCB for a given region regulates discharges of fill or pollutants into Waters of the State through the issuance of various permits and orders. Discharges into Waters of the State that are also Waters of the U.S. require a Section 401 Water Quality Certification from the RWQCB as a prerequisite to obtaining certain federal permits, such as a Section 404 Clean Water Act permit. Discharges into all Waters of the State, even those that are not also Waters of the U.S., require Waste Discharge Requirements (WDRs), or waivers of WDRs, from the RWQCB. The RWQCB also administers the Construction Storm Water Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one or more acres of soil must obtain a Construction General Permit under the Construction Storm Water Program. A prerequisite for this permit is the

development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, storm water, or other pollutants into a Water of the U.S. may require a NPDES permit.

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a Notification of Lake or Streambed Alteration. If CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

3.3 POTENTIALLY SIGNIFICANT PROJECT IMPACTS/MITIGATION

As discussed, the project is the incorporation of 20 acres containing non-native grassland and a citrus orchard into existing mining operations on adjoining land. It is assumed that all habitats on the site will be permanently impacted.

3.3.1 Project Impacts to Nesting Loggerhead Shrikes and Other Migratory Birds

Potential Impacts. The project site contains suitable nesting habitat for a few avian species protected by state laws in the form of grasslands and citrus trees. If birds were to be nesting on or adjacent to the project site at the time of construction, project-related activities could result in the abandonment of active nests or direct mortality to these birds. Construction activities that adversely affect the nesting success of raptors or result in mortality of individual birds constitute a violation of state laws (see Sections 3.2.3 and 3.2.4) and would be considered a significant impact under CEQA.

Mitigation. In order to minimize construction disturbance to nesting birds, the applicant will implement the following measure(s), as necessary, prior to project construction:

> ***Mitigation 3.3.1a* (*Avoidance*).** In order to avoid impacts to nesting birds, construction will occur, where possible, outside the nesting season, or between September 1 and January 31.

***Mitigation 3.3.1b* (*Pre-construction Surveys*).** If construction must occur during the nesting season (February 1-August 31), a qualified biologist will conduct pre-construction surveys for active bird nests within 10 days of the onset of project initiation. Nest surveys will encompass the project site and adjacent lands within 250 feet for migratory birds and 500 feet for raptors. Inaccessible portions of the survey area will be scanned with binoculars or spotting scope, as appropriate. If no active nests are found within the survey area, no further mitigation is required.

***Mitigation 3.3.1c* (*Establish Buffers*).** If active nests are found within the survey area, a qualified biologist will establish appropriate no-disturbance buffers based on species tolerance of human disturbance, baseline levels of disturbance, and barriers that may separate the nest from construction disturbance. These buffers will remain in place until the breeding season has ended or until the qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival.

Compliance with the above mitigation measures would reduce impacts to nesting raptors and migratory birds, to a less than significant level under CEQA, and ensure compliance with state laws.

3.3.2 Degradation of Water Quality in Seasonal Drainages, Stock Ponds, and Downstream Waters

Potential Impacts. Proposed mining activities will result in large areas of exposed soils barren of vegetation and, therefore, vulnerable to erosion. Eroded soil has the potential to be carried as sediment in surface runoff to be deposited in nearby Deer Creek. Furthermore, runoff could be polluted with grease, oil, heavy metals, etc. Such erosion is considered a potentially significant adverse impact under CEQA.

Mitigation. Prior to the onset of construction, an erosion control plan will be prepared by a qualified engineer consistent with the requirements of a Tulare County grading permit and a RWQCB General Construction Permit, if necessary. Typically, specified erosion control measures must be implemented prior to the onset of the rainy season. Construction sites must then be monitored periodically throughout the rainy season to ensure that the erosion control measures are successfully preventing on-site erosion and the concomitant deposition of sediment off site. Elements of this plan would address both the potential for soil erosion and non-point source pollution. At a minimum, elements of an erosion control plan typically include the following:

1) Protection of exposed graded slopes from sheet, rill and gully erosion. Such protection could be in the form of erosion control fabric, hydromulch containing the seed of native soil-binding plants, straw mechanically imbedded in exposed soils, or some combination of the three.

2) Protection of natural drainage channels from sedimentation. Hay bale check dams should be installed below graded areas so that any sediment carried by surface runoff is intercepted and retained behind the check dams before it can enter downslope waterways.

3) Use of best management practices (BMPs) to control soil erosion and non-point source pollution. BMPs may include measures in 1 and 2 above, but they may include any number of additional measures appropriate for this particular site and this particular project, including grease traps in parking lots, landscape management practices to reduce the use of pesticides and herbicides, the discharge of stormwater runoff from "hardscapes" into grassy swales, regular site inspections for pollutants that could be carried by runoff into natural drainages, etc.

Implementation of erosion control measures typically required by Tulare County as conditions of its grading permit and the RWQCB as conditions of its General Construction Permit would reduce impacts to water quality in seasonal creeks, reservoirs and downstream drainages to a less than significant level.

3.4 LESS THAN SIGNIFICANT PROJECT IMPACTS

3.4.1 Loss of Habitat for Special Status Plants

Potential Impacts. Fifteen (15) special status vascular plant species are known to occur in the region: Kaweah brodiaea, Springville clarkia, San Joaquin woollythreads, striped adobe lily, San Joaquin adobe sunburst, Keck's checkerbloom, Abrams' onion, Munz's iris, rose-flowered larkspur, recurved larkspur, spiny-sepaled button celery, Madera leptosiphon, calico monkeyflower, shining navarretia, and chaparral ragwort (see Table 1). Due to the absence of suitable habitat on the project site, the project site being located outside the range of these species, and/or the absence of these species during spring transect surveys at a time when the species would have been observable, all 15 of these species are not expected to occur on the site. Therefore, the proposed project would not affect regional populations of these species and impacts would be less than significant.

Mitigation. Mitigation measures are not warranted.

3.4.2 Project Impacts to Special Status Animal Species Absent from, or Unlikely to Occur on the Project Site

Potential Impacts. Of the 16 special status animal species that potentially occur in the project vicinity, 9 are considered absent or unlikely to occur within the project site due to the absence of suitable habitat, and/or the site being situated outside of the species' known distribution. These species include the vernal pool fairy shrimp, foothill yellow-legged frog, California condor, California wolverine, San Joaquin kit fox, western pond turtle, Northern California legless lizard, burrowing owl, and American badger (see Table 1). The project does not have the potential to significantly impact these species through construction mortality or loss of habitat because there is little or no likelihood that they are present.

Mitigation. Project impacts to special status animals considered absent or unlikely to occur on the site are less than significant under CEQA. Mitigation is not warranted.

3.4.3 Project Impacts to Special Status Animal Species that May Occur on the Project Site as Occasional or Regular Foragers but Breed Elsewhere

Potential Impacts. Seven (7) special status animals, the golden eagle, loggerhead shrike, tricolored blackbird, black swift, Townsend's big-eared bat, western mastiff bat, and pallid bat have the potential to forage on the site from time to time but would not breed on-site (see Table 1). Potential foraging habitat on the project site is not uniquely important for these species and similar or higher quality foraging habitat is abundant in the region. Therefore, the loss of foraging habitat for these 7 species is not a significant impact of the project under CEQA.

Mitigation. Mitigation is not warranted.

3.4.4 Project Impacts to Fish and Wildlife Movements, Movement Corridors, and Use of Nursery Sites.

Potential Impacts. While some common wildlife species, primarily birds, are expected to regularly use and/or pass through the site, the project site does not contain any features that would function as a fish or wildlife movement corridor or be considered a nursery site.

Therefore, the project will not substantially impede the movement of native fish or wildlife species, nor impede their use of a nursery site. Project impacts to wildlife movements, movement corridors, and nursery sites are considered less than significant under CEQA.

Mitigation. Mitigation measures are not warranted.

3.4.5 Project Impacts to Potential Federally Protected Waters and Waters of the State

Potential Impacts. The project site contains no hydrologic features. As such, federally protected waters and waters of the state are absent from the project site. The project will have no impact on jurisdictional waters.

Mitigation. Mitigations are not warranted.

3.4.6 Project Impacts to Riparian Habitat other Sensitive Habitats

Potential Impacts. No riparian or other sensitive habitats occur on the project site. Because these habitats are absent, they will not be impacted by project activities.

Mitigation. Mitigation measures are not warranted.

3.4.7 Local Policies or Habitat Conservation Plans

Potential Impacts. The proposed project appears to be consistent with the goals and policies of the Tulare County General Plan. No known Habitat Conservation Plans or Natural Community Conservation Plans are in effect for the area. Therefore, the project would be carried out in compliance with local policies and ordinances.

Mitigation. No mitigation is warranted.

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APPENDIX A: VASCULAR PLANTS OF THE PROJECT SITE

APPENDIX A
VASCULAR PLANTS OF THE PROJECT SITE

The plant species listed below have been observed within or adjacent to the project site during site surveys conducted by Live Oak Associates, Inc., on April 11, 2019. The U.S. Fish and Wildlife Service wetland indicator status for each plant has been shown following the common name of the plant species.

OBL - Obligate
FACW - Facultative Wetland
FAC - Facultative
FACU - Facultative Upland
UPL - Upland
+/- - Higher/lower end of category
NR - No review
NA - No agreement
NI - No investigation

AMARANTHACEAE – Amaranth Family		
Amaranthus albus	Tumbleweed	FACU
APIACEAE – Carrot Family		
Lomatium utriculatum	Common Lomatium	UPL
ASCLEPIADACEAE – Milkweed Family		
Asclepias vestita	Woolly Milkweed	UPL
ASTERACEAE – Sunflower Family		
Achyrachaena mollis	Blow Wives	FAC
Hesperevax caulescens	Hogwallow Starfish	OBL
Holocarpha heermannii	Heermann's Tarweed	UPL
Hypochaeris glabra	Smooth Cat's-ear	UPL
Micropus californicus ssp. *californicus*	Cotton-top	FACU
Microseris douglasii	Douglas' Microseris	FACU
Senecio vulgaris	Common groundsel	FACU
BORAGINACEAE –Borage Family		
Amsinckia intermedia	Common Fiddleneck	UPL
Phacelia cicutaria	Caterpillar Phacelia	UPL
BRASSICACEAE – Mustard Family		
Brassica nigra	Black Mustard	UPL
Capsella bursa-pastoris	Shepherd's Purse	FAC-
Lepidium nitidum	Common Peppergrass	UPL
CAPRIFOLIACEAE – Honeysuckle Family		
Sambucus nigra ssp. caerulea	Blue Elderberry	FAC
CARYOPHYLLACEAE – Pink Family		
Cerastium vulgatum	Mouse-eared Chickweed	FACU
CHENOPODIACEAE – Goosefoot Family		
Chenopodium album	Lambs Quarters	FACU
EUPHORBIACEAE – Spurge Family		
Euphorbia albomarginata	Rattlesnake Weed	UPL
FABACEAE -- Pea Family		
Medicago polymorpha	Bur Clover	UPL

GERANEACEAE – Geranium Family		
Erodium cicutarium	Red Stemmed Filaree	UPL
Erodium moschatum	White-stem Filaree	UPL
LILIACEAE – Lily Family		
Dichelostemma capitatum	Blue Dicks	UPL
Tritelia ixioides ssp. *analina*	Pretty-face	UPL
Triteleia laxa	Ithuriel's spear	UPL
PLANTAGINACEAE – Plantain Family		
Plantago erecta	California plantain	UPL
POACEAE – Grass Family		
Avena fatua	Wild Oat	UPL
Avena barbata	Slender Wild Oats	UPL
Bromus diandrus	Ripgut Brome	UPL
Bromus hordeaceous	Soft-chess Brome	FACU
Bromus madritensis ssp. rubens	Red Brome	UPL
Hordeum murinum ssp. *leporinum*	Barnyard Barley	NI
Lolium multiflorum	Italian Ryegrass	UPL
Festuca myuros	Rattail Fescue	FACU
SOLANACEAE – Nightshade Family		
Datura wrightii	Jimson Weed	UPL

APPENDIX B: TERRESTRIAL VERTEBRATE SPECIES POTENTIALLY OCCURRING ON THE PROJECT SITE

APPENDIX B
TERRESTRIAL VERTEBRATE SPECIES POTENTIALLY OCCURRING ON THE PROJECT SITE

The species listed below are those that may reasonably be expected to use the habitats of the project site. The list was not intended to include birds that are vagrants or occasional transients. Its purpose was rather to include those species that may be expected to routinely and predictably use the project site during some or all of the year. An asterisk denotes a species observed within or adjacent to the site during surveys conducted on April 11, 2019.

CLASS: AMPHIBIA (Amphibians)
ORDER: ANURA (Frogs and Toads)
FAMILY: BUFONIDAE (True Toads)
Western Toad (*Bufo boreas*)
FAMILY: HYLIDAE (Tree Frogs and Relatives)
Pacific Chorus Frog (*Pseudacris regilla*)

CLASS: REPTILIA (Reptiles)
ORDER: SQUAMATA (Lizards and Snakes)
FAMILY: PHRYNOSOMATIDAE
Western Fence Lizard (*Sceloporus occidentalis*)
Common Side-blotched Lizard (*Uta stansburiana*)
FAMILY: ANGUIDAE (Alligator Lizards and Relatives)
Southern Alligator Lizard (*Elgaria multicarinata*)
FAMILY: BOIDAE (Boas)
Rubber Boa (*Charina bottae*)
FAMILY: COLUBRIDAE (Colubrids)
Ring-Necked Snake (*Diadophis punctatus*)
Sharp-Tailed Snake (*Contia tenuis*)
Racer (*Coluber constrictor*)
California Whipsnake (Striped Racer) (*Masticophis lateralis*)
Gopher Snake (*Pituophis catenifer*)
Common Kingsnake (*Lampropeltis getula*)
Common Garter Snake (*Thamnophis sirtalis*)
Western Terrestrial Garter Snake (*Thamnophis elegans*)
Night Snake (*Hypsiglena torquata*)
FAMILY: VIPERIDAE (Vipers)
*Western Rattlesnake (*Crotalus viridis*)

CLASS: AVES (Birds)
ORDER: CICONIIFORMES (Herons, Storks, Ibises and Relatives)
FAMILY: ARDEIDAE (Herons and Bitterns)
Great Blue Heron (*Ardea herodias*)
FAMILY: CATHARTIDAE (New World Vultures)
*Turkey Vulture (*Cathartes aura*)
ORDER: ANSERIFORMES (Screamers, Ducks and Relatives)

ORDER: FALCONIFORMES (Vultures, Hawks and Falcons)
FAMILY: ACCIPITRIDAE (Hawks, Old World Vultures and Harriers)
Sharp-Shinned Hawk (*Accipiter striatus*)
Cooper's Hawk (*Accipiter cooperii*)
Red-Shouldered Hawk (*Buteo lineatus*)
*Red-Tailed Hawk (*Buteo jamaicensis*)
Ferruginous Hawk (*Buteo regalis*)
FAMILY: FALCONIDAE (Caracaras and Falcons)
*American Kestrel (*Falco sparverius*)
ORDER: CHARADRIIFORMES (Shorebirds, Gulls and Relatives)
FAMILY: CHARADRIIDAE (Plovers and Relatives)
Killdeer (*Charadrius vociferus*)
ORDER: COLUMBIFORMES (Pigeons and Doves)
FAMILY: COLUMBIDAE (Pigeons and Doves)
Mourning Dove (*Zenaida macroura*)
ORDER: PSITTACIFORMES (Parrots and Relatives)
ORDER: STRIGIFORMES (Owls)
FAMILY: TYTONIDAE (Barn Owls)
Barn Owl (*Tyto alba*)
FAMILY: STRIGIDAE (Typical Owls)
Great Horned Owl (*Bubo virginianus*)
Northern Pygmy Owl (*Glaucidium gnoma*)
ORDER: APODIFORMES (Swifts and Hummingbirds)
FAMILY: APODIDAE (Swifts)
Black Swift (*Cypseloides niger*)
White-Throated Swift (*Aeronautes saxatalis*)
FAMILY: TROCHILIDAE (Hummingbirds)
Black-Chinned Hummingbird (*Archilochus alexandri*)
Anna's Hummingbird (*Calypte anna*)
Rufous Hummingbird (*Selasphorus rufus*)
ORDER: PICIFORMES (Woodpeckers and relatives)
FAMILY: PICIDAE (Woodpecker and Wrynecks)
*Northern Flicker (*Colaptes chrysoides*)
ORDER: PASSERIFORMES (Perching Birds)
FAMILY: TYRANNIDAE (Tyrant Flycatchers)
Black Phoebe (*Sayornis nigricans*)
Says Pheobe (*Sayornis saya*)
Ash-Throated Flycatcher (*Myiarchus cinerascens*)
*Western Kingbird (*Tyrannus verticalis*)
FAMILY: LANIIDAE (Shrikes)
Loggerhead Shrike (*Lanius ludovicianus*)
FAMILY: CORVIDAE (Jays, Magpies and Crows)
Western Scrub-Jay (*Aphelocoma californica*)
American Crow (*Corvus brachyrhynchos*)
*Common Raven (*Corvus corax*)
FAMILY: ALAUDIDAE (Horned Larks)

Horned Lark (*Eremophila alpestris*)

FAMILY: HIRUNDINIDAE (Swallows)

Tree Swallow (*Tachycineta bicolor*)

Violet-Green Swallow (*Tachycineta thalassina*)

*Northern Rough-Winged Swallow (*Stelgidopteryx serripennis*)

Cliff Swallow (*Petrochelidon pyrrhonota*)

Barn Swallow (*Hirundo rustica*)

FAMILY: TROGLODYTIDAE (Wrens)

Rock Wren (*Salpinctes obsoletus*)

FAMILY: TURDIDAE (Thrushes)

Western Bluebird (*Sialia mexicana*)

Mountain Bluebird (*Sialia currucoides*)

American Robin (*Turdus migratorius*)

FAMILY: MIMIDAE (Mockingbirds and Thrashers)

Northern Mockingbird (*Mimus polyglottos*)

FAMILY: STURNIDAE (Starlings and Allies)

*European Starling (*Sturnus vulgaris*)

FAMILY: BOMBYCILLIDAE (Waxwings)

Cedar Waxwing (*Bombycilla cedrorum*)

FAMILY: PARULIDAE (Wood Warblers and Relatives)

Yellow-Rumped Warbler (*Dendroica coronata*)

FAMILY: THRAUPIDAE (Tanagers)

Western Tanager (*Piranga ludoviciana*)

FAMILY: EMBERIZIDAE (Emberizines)

Lark Sparrow (*Chondestes grammacus*)

Song Sparrow (*Melospiza melodia*)

*Savannah Sparrow (*Passerculus sandwichensis*)

White-Crowned Sparrow (*Zonotrichia leucophrys*)

*Dark-Eyed Junco (*Junco hyemalis*)

FAMILY: CARDINALIDAE (Cardinals, Grosbeaks and Allies)

Lazuli Bunting (*Passerina amoena*)

FAMILY: ICTERIDAE (Blackbirds, Orioles and Allies)

Brewer's Blackbird (*Euphagus cyanocephalus*)

Red-winged Blackbird (*Agelaius phoeniceus*)

Tricolored Blackbird (*Agelaius tricolor*)

Brown-Headed Cowbird (*Molothrus ater*)

*Western Meadowlark (*Sturna neglecta*)

*Bullock's Oriole (*Icterus bullockii*)

FAMILY: FRINGILLIDAE (Finches)

*House Finch (*Carpodacus mexicanus*)

American Goldfinch (*Carduelis tristis*)

Lesser Goldfinch (*Carduelis psaltria*)

Lawrence's Goldfinch (*Carduelis lawrencei*)

CLASS: MAMMALIA (Mammals)

ORDER: DIDELPHIMORPHIA (Marsupials)

FAMILY: DIDELPHIDAE (Opossums)
Virginia Opossum (*Didelphis virginiana*)
FAMILY: TALPIDAE (Moles)
Broad-Footed Mole (*Scapanus latimanus*)
ORDER: CHIROPTERA (Bats)
FAMILY: VESPERTILIONIDAE (Evening Bats)
Little Brown Myotis (*Myotis lucifugus*)
Yuma Myotis (*Myotis yumanensis*)
Long-Eared Myotis (*Myotis evotis*)
Fringed Myotis (*Myotis thysanodes*)
Long-Legged Myotis (*Myotis volans*)
California Myotis (*Myotis californicus*)
Western Small-Footed Myotis (*Myotis ciliolabrum*)
Western Pipistrelle (*Pipistrellus hesperus*)
Big Brown Bat (*Eptesicus fuscus*)
Hoary Bat (*Lasiurus cinereus*)
Pale Big-eared Bat (*Corynorhinus townsendii pallescens*)
Townsend's Big-Eared Bat (*Corynorhinus townsendii townsendii*)
Pallid Bat (*Antrozous pallidus*)
FAMILY: MOLOSSIDAE (Free-tailed Bats)
Brazilian Free-Tailed Bat (*Tadarida brasiliensis*)
Western Mastiff Bat (*Eumops perotis*)
ORDER: LAGOMORPHA (Rabbits, Hares and Pika)
FAMILY: LEPORIDAE (Rabbits and Hares)
Desert Cottontail (*Sylvilagus audubonii*)
ORDER: RODENTIA (Rodents)
FAMILY: SCIURIDAE (Squirrels, Chipmunks and Marmots)
California Ground Squirrel (*Spermophilus beecheyi*)
FAMILY: GEOMYIDAE (Pocket Gophers)
Botta's Pocket Gopher (*Thomomys bottae*)
FAMILY: HETEROMYIDAE (Pocket Mice and Kangaroo Rats)
California Pocket Mouse (*Chaetodipus californicus*)
FAMILY: MURIDAE (Mice, Rats and Voles)
Western Harvest Mouse (*Reithrodontomys megalotis*)
California Mouse (*Peromyscus californicus*)
Deer Mouse (*Peromyscus maniculatus*)
California Vole (*Microtus californicus*)
House Mouse (*Mus musculus*)
ORDER: CARNIVORA (Carnivores)
FAMILY: CANIDAE (Foxes, Wolves and Relatives)
Coyote (*Canis latrans*)
Gray Fox (*Urocyon cinereoargenteus*)
FAMILY: MEPHITIDAE (Skunks)
Striped Skunk (*Mephitis mephitis*)
FAMILY: FELIDAE (Cats)
Bobcat (*Lynx rufus*)

ORDER: ARTIODACTYLA (Even-toed Ungulates)

FAMILY: CERVIDAE (Deer, Elk and Relatives)

Mule Deer (*Odocoileus hemionus*)

APPENDIX C:
SELECT PHOTOGRAPHS OF THE PROJECT SITE

Photo 1: View from highest elevations of the site with onsite non-native grassland habitat and citrus orchard visible.

Photo 2: Some of the few small rock outcrops on the site.

Photo 3: Areas of photo with cream colored flowers (pretty face) contained Centerville clay inclusions. These areas were scattered throughout the northeastern slope of the site.

APPENDIX "C"

CULTURAL AND TRIBAL CULTURAL RESOURCES

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TRIBAL CONSULTATION

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Consultation Notice – Deer Creek Mine Expansion																
TRIBE CONTACTED	REQUEST TYPE		DOCUMENTS SENT					MAILED				CONSULTATION PERIOD		CONSULTATION / ACTIONS		
	AB 52	SB 18	Map (showing both APNs in GIS generated map)	Project Description	SLF Search	CHRIS	Other	Date	E-mail	FedEx	Certified US Mail	30-day Begins w/ Return Receipt	30-day Period Ends	Date	TYPE	Summary
SACRED LAND FILE (SLF) REQUEST																
Native American Heritage Commission	X		x	x			NAHC forms	2/22/19	X					2/27/19	Email / letter	Provided results of SLF Search and listing of tribal contacts
CONSULTATION REQUEST LETTERS																
Kern Valley Indian Council Robert Robinson, Co-Chairperson P.O. Box 1010 Lake Isabella, CA 93240	x		x	x				3/8/19			7013060 0000216 982241	3/22/19	4/22/19	No Responses Received		
Kern Valley Indian Council Julie Turner, Secretary P. Box 1010 Lake Isabella, CA 93240	x		x	x				3/8/19			7013060 0000216 982258	3/22/19	4/22/19	No Responses Received		
Santa Rosa Rancheria Tachi Yokut Tribe Rueben Barrios Sr., Chairperson P. O. Box 8 Lemoore, CA 93245	x		x	x				3/8/19			7013060 0000216 982234	3/13/19	4/12/19	No Responses Received		3/29/19: Email from Shana Powers requesting consultation. 4/1/19: Email to Shana Powers (and other tribal representatives) requesting in-person meeting and providing requested SLF results and maps. 4/16/16: Follow-up email to Shana; no response received. 8/28/19: Email to Shana Powers (and four other tribal representatives) providing the SLF results and the Cultural Study.
Santa Rosa Rancheria Cultural Department Shana Powers, Director P. O. Box 8 Lemoore, CA 93245	x		x	x				3/8/19			7013060 0000216 982180	3/12/19	4/11/19	See Summary		
Santa Rosa Rancheria Tachi Yokut Tribe Cultural Department Greg Cuara, Cultural Specialist P. O. Box 8 Lemoore, CA 93245	x		x	x				3/8/19			7013060 0000216 982173	3/12/19	4/11/19	No Responses Received		
Torres Martinez Desert Cahuilla Indians Michael Mirelez, Cultural Resource Coordinator P. O. Box 1160 Thermal, CA 92274	x		x	x				3/8/19			7013060 0000216 982197	3/18/19	4/17/19	No Responses Received		

Consultation Notice – Deer Creek Mine Expansion																
TRIBE CONTACTED	REQUEST TYPE		DOCUMENTS SENT					MAILED				CONSULTATION PERIOD		CONSULTATION / ACTIONS		
	AB 52	SB 18	Map (showing both APNs in GIS generated map)	Project Description	SLF Search	CHRIS	Other	Date	E-mail	FedEx	Certified US Mail	30-day Begins w/ Return Receipt	30-day Period Ends	Date	TYPE	Summary
Tubatulabals of Kern Valley Robert L. Gomez, Jr., Chairperson P.O. Box 226 Lake Isabella, CA 93240	x		x	x				3/8/19			7013060 0000216 982227	3/15/19	4/15/19	No Responses Received		
Tule River Indian Tribe Neil Peyron, Chairperson P. O. Box 589 Porterville, CA 93258	x		x	x				3/8/19			7013060 0000216 982210	3/11/19	4/10/19	No Responses Received		8/28/19: Email to Keri Vera (and two other representatives) providing the SLF results and the Cultural Study. No further responses received.
Tule River Indian Tribe Environmental Department Kerri Vera, Director P. O. Box 589 Porterville, CA 93258	x		x	x				3/8/19			7013060 0000216 982166	3/11/19	4/10/19	See Summary		
Tule River Indian Tribe Department of Environmental Protection Felix Christman, Archaeological Monitor P. O. Box 589 Porterville, CA 93258	x		x	x				3/8/19			7013060 0000216 982265	3/11/19	4/10/19	No Responses Received		
Wuksache Indian Tribe/ Eshom Valley Band Kenneth Woodrow, Chairperson 1179 Rock Haven Ct. Salinas, CA 93906	x		x	x				3/8/19			7013060 0000216 982203	3/11/19	4/10/19	No Responses Received		

RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA 93277
PHONE (559) 624-7000
FAX (559) 730-2653

Michael Washam	Economic Development and Planning
Reed Schenke	Public Works
Sherman Dix	Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

March 8, 2019

Santa Rosa Rancheria Tachi Yokut Tribe
Rueben Barrios Sr., Chaiperson
P.O. Box 8
Lemoore, CA 93245

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Deer Creek Mine Expansion Project (PMR 19-001)

Dear Chairperson Barrios,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Deer Creek Mine Expansion Project in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

- Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine; and
- Native American historic, cultural, or sacred site that is listed or may be eligible for listing in the California Register of Historical Resources including historic or prehistoric ruins and any burial ground, archaeological, or historic site.

In accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), the County of Tulare Resource Management Agency (RMA) will be preparing a Draft Environmental Impact Report (DEIR) to evaluate the environmental effects associated with the Project.

Sacred Lands File Search

The County requested a Sacred Lands File (SLF) search through the Native American Heritage Commission (NAHC) on February 22, 2019, for the Deer Creek Mine Expansion Project. The SLF search returned on February 27, 2019, indicating **positive** results. The NAHC recommended consultation with your Tribe. Results of the SLF search, excluding specific finds (e.g. artifacts), location(s), or other confidential information, will be made available upon the release of the DEIR for public review. Results may be made available to your Tribal Representatives if a written request for constultation is submitted to the County within thirty (30) days of receipt of this letter.

California Historical Resources Information System

A Cultural Resources Assessment Report will be prepared for the project. The report will be prepared in compliance with Section 106 of the National Historic Preservation Act (NHPA; 16 USC 470) and its implementing regulations at 36 CFR 800, as well as the provisions of the California Environmental Quality Act. The report will include research through the Southern San Joaquin Valley Information Center (SSJVIC) and other appropriate data repositories and geomorphological and soil analyses. The Cultural Resources Assessment Report will be made available upon the release of the DEIR for public review. However, the report may be made available to your Tribal Representatives if a written request for consultation is submitted to the County within thirty (30) days of receipt of this letter.

If your Tribe desires to consult with the County on the review of this project, **please respond in writing within thirty (30) days of receipt of this letter**. Written correspondence can be mailed to the address provided above or e-mailed to the addresses provided below.

If the County does not receive a response to this notification, it will be presumed that your Tribe has declined the opportunity to consult on this project pursuant to AB 52.

Thank you for your consideration on this matter and please do not hesitate to contact me by phone or e-mail should you have any questions or need additional information. If you need immediate assistance and I am unavailable, please contact Jessica Willis, Planner IV, by phone at (559) 624-7122, or by email at JWillis@co.tulare.ca.us.

Sincerely,

Hector Guerra
Chief Environmental Planner
(559) 624-7121
HGuerra@co.tulare.ca.us

Attachment: Tribal Consultation Notice

RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA 93277
PHONE (559) 624-7000
FAX (559) 730-2653

Michael Washam — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR
MICHAEL WASHAM, ASSOCIATE DIRECTOR

March 8, 2019

Tule River Indian Tribe
Department of Environmental Protection
Felix Christman, Archaeological Monitor
P.O. Box 589
Porterville, CA 93258

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Deer Creek Mine Expansion Project (PMR 19-001)

Dear Mr. Christman,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Deer Creek Mine Expansion Project in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

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If the County does not receive a response to this notification, it will be presumed that your Tribe has declined the opportunity to consult on this project pursuant to AB 52.

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Sincerely,

Hector Guerra
Chief Environmental Planner
(559) 624-7121
HGuerra@co.tulare.ca.us

Attachment: Tribal Consultation Notice

RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA 93277
PHONE (559) 624-7000
FAX (559) 730-2653

Michael Washam — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

March 8, 2019

Santa Rosa Rancheria Tachi Yokut Tribe
Cultural Department
Greg Cuara, Cultural Specialist
P.O. Box 8
Lemoore, CA 93245

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Deer Creek Mine Expansion Project (PMR 19-001)

Dear Mr. Cuara,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Deer Creek Mine Expansion Project in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

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Michael Washam — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

March 8, 2019

Tubatulabals of Kern Valley
Robert L. Gomez, Jr., Chairperson
P.O. Box 226
Lake Isabella, CA 93240

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Deer Creek Mine Expansion Project (PMR 19-001)

Dear Chairperson Gomez,

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Michael Washam — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR
MICHAEL WASHAM, ASSOCIATE DIRECTOR

March 8, 2019

Torres Martinez Desert Cahuilla Indians
Michael Mirelez, Cultural Resource Coordinator
P.O. Box 1160
Thermal, CA 92274

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Deer Creek Mine Expansion Project (PMR 19-001)

Dear Mr. Mirelez,

Pursuant to the provisions of AB 52, as the lead agency under the California Environmental Quality Act (CEQA), the County of Tulare hereby extends an invitation to consult on the California Environmental Quality Act (CEQA) review of the Deer Creek Mine Expansion Project in order to assist with identifying and/or preserving and/or mitigating project impacts to Native American cultural places including:

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Michael Washam	Economic Development and Planning
Reed Schenke	Public Works
Sherman Dix	Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

March 8, 2019

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589
Porterville, CA 93258

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Deer Creek Mine Expansion Project (PMR 19-001)

Dear Chairperson Peyron,

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Michael Washam — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

March 8, 2019

Santa Rosa Rancheria
Cultural Department
Shana Powers, Director
P.O. Box 8
Lemoore, CA 93245

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Deer Creek Mine Expansion Project (PMR 19-001)

Dear Ms. Powers,

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Michael Washam	Economic Development and Planning
Reed Schenke	Public Works
Sherman Dix	Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

March 8, 2019

Kern Valley Indian Council
Robert Robinson, Chairperson
PO Box 1010
Lake Isabella, CA 93240

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Deer Creek Mine Expansion Project (PMR 19-001)

Dear Chairperson Robinson,

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Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

March 7, 2019

Kern Valley Indian Council
Julie Turner, Secretary
PO Box 1010
Lake Isabella, CA 93240

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Deer Creek Mine Expansion Project (PMR 19-001)

Dear Ms. Turner,

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REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

March 8, 2019

Tule River Indian Tribe
Environmental Department
Kerri Vera, Director
P.O. Box 589
Porterville, CA 93258

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Deer Creek Mine Expansion Project (PMR 19-001)

Dear Ms. Vera,

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REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

March 8, 2019

Wuksache Indian Tribe/
Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas, CA 93906

RE: Project Notification Pursuant to Assembly Bill (AB) 52 for the Deer Creek Mine Expansion Project (PMR 19-001)

Dear Chairperson Woodrow,

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In accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), the County of Tulare Resource Management Agency (RMA) will be preparing a Draft Environmental Impact Report (DEIR) to evaluate the environmental effects associated with the Project.

Sacred Lands File Search

The County requested a Sacred Lands File (SLF) search through the Native American Heritage Commission (NAHC) on February 22, 2019, for the Deer Creek Mine Expansion Project. The SLF search returned on February 27, 2019, indicating **positive** results. The NAHC recommended consultation with your Tribe. Results of the SLF search, excluding specific finds (e.g. artifacts), location(s), or other confidential information, will be made available upon the release of the DEIR for public review. Results may be made available to your Tribal Representatives if a written request for constultation is submitted to the County within thirty (30) days of receipt of this letter.

California Historical Resources Information System

A Cultural Resources Assessment Report will be prepared for the project. The report will be prepared in compliance with Section 106 of the National Historic Preservation Act (NHPA; 16 USC 470) and its implementing regulations at 36 CFR 800, as well as the provisions of the California Environmental Quality Act. The report will include research through the Southern San Joaquin Valley Information Center (SSJVIC) and other appropriate data repositories and geomorphological and soil analyses. The Cultural Resources Assessment Report will be made available upon the release of the DEIR for public review. However, the report may be made available to your Tribal Representatives if a written request for consultation is submitted to the County within thirty (30) days of receipt of this letter.

If your Tribe desires to consult with the County on the review of this project, **please respond in writing within thirty (30) days of receipt of this letter**. Written correspondence can be mailed to the address provided above or e-mailed to the addresses provided below.

If the County does not receive a response to this notification, it will be presumed that your Tribe has declined the opportunity to consult on this project pursuant to AB 52.

Thank you for your consideration on this matter and please do not hesitate to contact me by phone or e-mail should you have any questions or need additional information. If you need immediate assistance and I am unavailable, please contact Jessica Willis, Planner IV, by phone at (559) 624-7122, or by email at JWillis@co.tulare.ca.us.

Sincerely,

Hector Guerra
Chief Environmental Planner
(559) 624-7121
HGuerra@co.tulare.ca.us

Attachment: Tribal Consultation Notice

CULTURAL RESOURCES REPORT

This report contains confidential information exempt from public disclosure pursuant to 54 USC 307103 (National Historic Preservation Act) and 16 USC Section 470(h) and (Archaeological Resources Protections Act). § 6254 (r): California Public Records Act Exemption from Disclosure.

APPENDIX "D"

CUSTOM SOIL RESOURCE REPORT

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CUSTOM SOIL RESOURCE REPORT FOR THE EXISTING DEER CREEK MINE

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United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Tulare County, California, Central Part

July 9, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:6,700 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Tulare County, California, Central Part
Survey Area Data: Version 12, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 15, 2016—Nov 5, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
110	Centerville clay, 2 to 9 percent slopes	0.1	0.1%
115	Cibo-Rock outcrop complex, 15 to 50 percent slopes	113.3	84.9%
131	Grangeville silt loam, drained	0.3	0.2%
139	Honcut sandy loam, 0 to 2 percent slopes	0.4	0.3%
149	Porterville clay, 9 to 15 percent slopes	5.4	4.0%
151	Riverwash	2.1	1.6%
164	Tujunga sand	5.4	4.1%
176	Yettem sandy loam, 0 to 2 percent slopes	6.6	4.9%
Totals for Area of Interest		**133.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor

components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Tulare County, California, Central Part

110—Centerville clay, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: hkd1
Elevation: 300 to 850 feet
Mean annual air temperature: 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Centerville and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Centerville

Setting

Landform: Alluvial fans, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Typical profile

A - 0 to 18 inches: clay
C - 18 to 37 inches: clay, sandy clay
C - 18 to 37 inches:

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: CLAYEY (R017XE001CA)
Hydric soil rating: No

Minor Components

San joaquin

Percent of map unit: 5 percent

Hydric soil rating: No

Unnamed, steeper slopes
Percent of map unit: 5 percent
Hydric soil rating: No

Exeter
Percent of map unit: 5 percent
Hydric soil rating: No

Porterville
Percent of map unit: 5 percent
Hydric soil rating: No

115—Cibo-Rock outcrop complex, 15 to 50 percent slopes

Map Unit Setting
National map unit symbol: hkd6
Elevation: 50 to 4,600 feet
Mean annual precipitation: 9 to 24 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 150 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition
Cibo and similar soils: 50 percent
Rock outcrop: 25 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cibo

Setting
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from gabbro

Typical profile
A - 0 to 19 inches: clay
C - 19 to 35 inches: clay, clay loam
C - 19 to 35 inches: bedrock
R - 35 to 45 inches:

Properties and qualities
Slope: 15 to 50 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: CLAYEY (R018XE001CA)
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8e
Hydric soil rating: No

Minor Components

Trabuco
Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed, , light colored subso
Percent of map unit: 5 percent
Hydric soil rating: No

Centerville
Percent of map unit: 5 percent
Hydric soil rating: No

Coarsegold
Percent of map unit: 5 percent
Hydric soil rating: No

Las posas
Percent of map unit: 5 percent
Hydric soil rating: No

131—Grangeville silt loam, drained

Map Unit Setting
National map unit symbol: hkdq
Elevation: 0 to 1,800 feet
Mean annual precipitation: 7 to 16 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 200 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Grangeville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Grangeville

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Typical profile

A - 0 to 14 inches: silt loam
C - 14 to 64 inches: stratified loamy sand to silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: Loamy Fan Remnant 8-10" P.Z. (R017XE061CA)
Hydric soil rating: Yes

Minor Components

San emigdio

Percent of map unit: 2 percent
Hydric soil rating: No

Tujunga

Percent of map unit: 2 percent
Hydric soil rating: No

Yettem

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent
Landform: Drainageways

Hydric soil rating: Yes

Unnamed, compacted

Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, silt loam surface

Percent of map unit: 1 percent
Hydric soil rating: No

139—Honcut sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hkdz
Elevation: 2,000 feet
Mean annual precipitation: 12 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 200 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Honcut and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Honcut

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Typical profile

Ap - 0 to 11 inches: sandy loam
C - 11 to 70 inches: sandy loam, coarse sandy loam
C - 11 to 70 inches:

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 13.0 inches)

Interpretive groups
Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Tujunga
Percent of map unit: 3 percent
Hydric soil rating: No

Yettem
Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed
Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, finer subsoil
Percent of map unit: 3 percent
Hydric soil rating: No

Greenfield
Percent of map unit: 3 percent
Hydric soil rating: No

San emigdio
Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, calcareous
Percent of map unit: 2 percent
Hydric soil rating: No

149—Porterville clay, 9 to 15 percent slopes

Map Unit Setting
National map unit symbol: hkf9
Elevation: 50 to 300 feet
Mean annual precipitation: 9 to 20 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 150 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition
Porterville and similar soils: 90 percent
Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Porterville

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous rock

Typical profile

Ap - 0 to 32 inches: clay
C - 32 to 72 inches: sandy clay, clay
C - 32 to 72 inches:

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: CLAYEY (R017XE001CA)
Hydric soil rating: No

Minor Components

Unnamed, w/ coarse fragments

Percent of map unit: 5 percent
Hydric soil rating: No

Centerville, clay

Percent of map unit: 5 percent
Hydric soil rating: No

151—Riverwash

Map Unit Composition

Riverwash: 95 percent

Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverwash

Setting

Landform: Channels
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear

Interpretive groups

Land capability classification (irrigated): 8
Land capability classification (nonirrigated): 8
Hydric soil rating: Yes

Minor Components

Honcut

Percent of map unit: 3 percent
Hydric soil rating: No

Tujunga

Percent of map unit: 2 percent
Hydric soil rating: No

164—Tujunga sand

Map Unit Setting

National map unit symbol: hkfs
Elevation: 10 to 2,500 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 280 to 350 days
Farmland classification: Not prime farmland

Map Unit Composition

Tujunga and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tujunga

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Typical profile

A - 0 to 16 inches: sand
C - 16 to 60 inches: sand, fine sand, loamy sand
C - 16 to 60 inches:
C - 16 to 60 inches:

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: SANDY (R017XE080CA)
Hydric soil rating: No

Minor Components

Honcut

Percent of map unit: 4 percent
Hydric soil rating: No

San emigdio

Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, calcareous

Percent of map unit: 3 percent
Hydric soil rating: No

176—Yettem sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hkg5
Elevation: 300 to 1,500 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Yettem and similar soils: 85 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yettem

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Typical profile

A - 0 to 26 inches: sandy loam
C - 26 to 70 inches: fine sandy loam, coarse sandy loam, sandy loam
C - 26 to 70 inches:
C - 26 to 70 inches:

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 13.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Grangeville

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: Yes

Havala

Percent of map unit: 3 percent
Hydric soil rating: No

San emigdio

Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, clayey substratum

Percent of map unit: 2 percent
Hydric soil rating: No

Tujunga

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent
Hydric soil rating: No

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CUSTOM SOIL RESOURCE REPORT FOR THE DEER CREEK MINE EXPANSION AREA

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United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Tulare County, California, Central Part

Deer CK Mine Exp Area

July 9, 2019

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

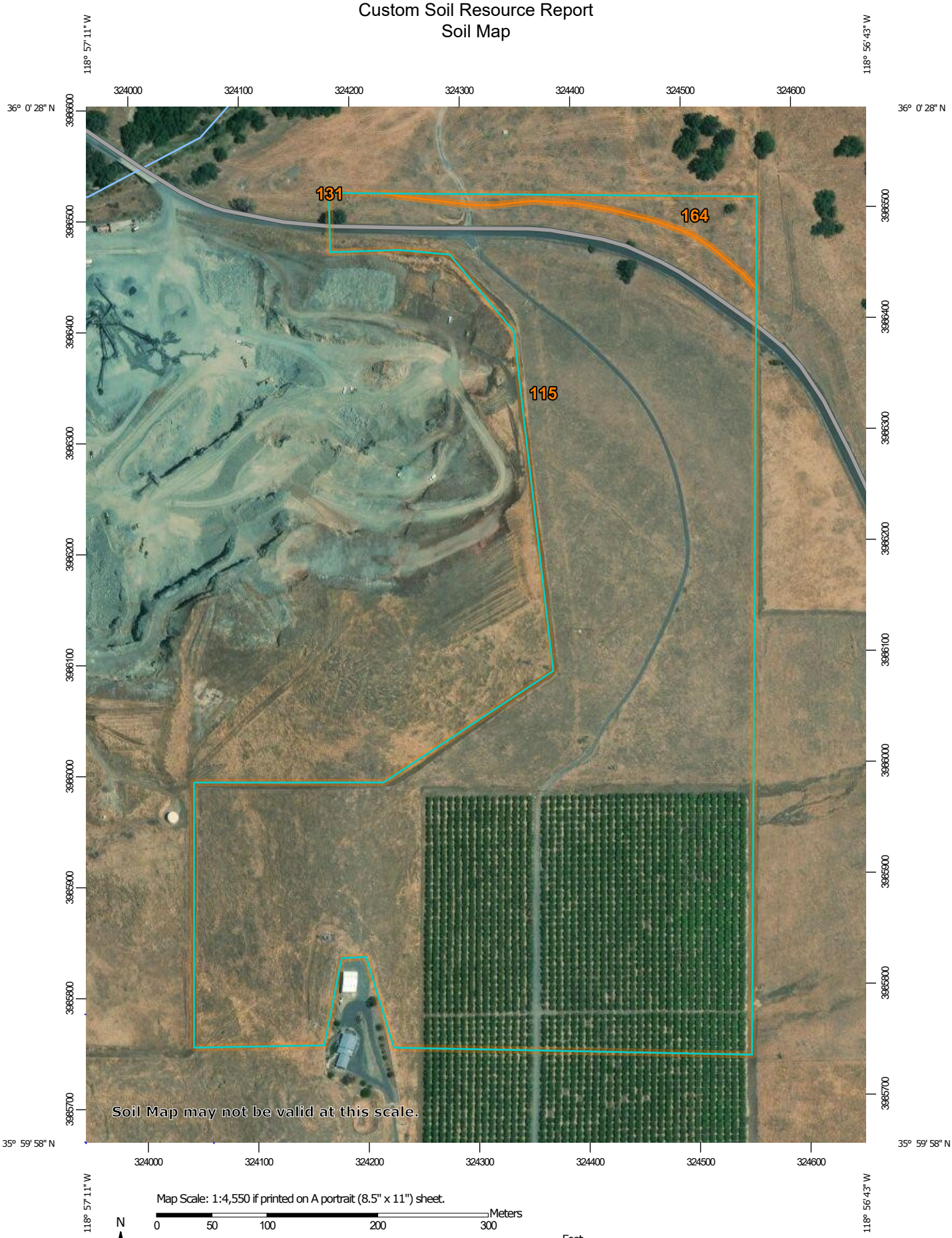
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:4,550 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Tulare County, California, Central Part
Survey Area Data: Version 12, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 15, 2016—Nov 5, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
115	Cibo-Rock outcrop complex, 15 to 50 percent slopes	58.8	97.4%
131	Grangeville silt loam, drained	0.0	0.0%
164	Tujunga sand	1.6	2.6%
Totals for Area of Interest		**60.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Tulare County, California, Central Part

115—Cibo-Rock outcrop complex, 15 to 50 percent slopes

Map Unit Setting

National map unit symbol: hkd6
Elevation: 50 to 4,600 feet
Mean annual precipitation: 9 to 24 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 150 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Cibo and similar soils: 50 percent
Rock outcrop: 25 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cibo

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Residuum weathered from gabbro

Typical profile

A - 0 to 19 inches: clay
C - 19 to 35 inches: clay, clay loam
C - 19 to 35 inches: bedrock
R - 35 to 45 inches:

Properties and qualities

Slope: 15 to 50 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: CLAYEY (R018XE001CA)
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8e

Hydric soil rating: No

Minor Components

Trabuco
Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed, , light colored subso
Percent of map unit: 5 percent
Hydric soil rating: No

Centerville
Percent of map unit: 5 percent
Hydric soil rating: No

Coarsegold
Percent of map unit: 5 percent
Hydric soil rating: No

Las posas
Percent of map unit: 5 percent
Hydric soil rating: No

131—Grangeville silt loam, drained

Map Unit Setting
National map unit symbol: hkdq
Elevation: 0 to 1,800 feet
Mean annual precipitation: 7 to 16 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 200 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Grangeville and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Grangeville

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Typical profile
A - 0 to 14 inches: silt loam

C - 14 to 64 inches: stratified loamy sand to silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: Loamy Fan Remnant 8-10" P.Z. (R017XE061CA)
Hydric soil rating: Yes

Minor Components

San emigdio

Percent of map unit: 2 percent
Hydric soil rating: No

Tujunga

Percent of map unit: 2 percent
Hydric soil rating: No

Yettem

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent
Landform: Drainageways
Hydric soil rating: Yes

Unnamed, compacted

Percent of map unit: 1 percent
Hydric soil rating: No

Unnamed, silt loam surface

Percent of map unit: 1 percent
Hydric soil rating: No

164—Tujunga sand

Map Unit Setting

National map unit symbol: hkfs
Elevation: 10 to 2,500 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 280 to 350 days
Farmland classification: Not prime farmland

Map Unit Composition

Tujunga and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tujunga

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Typical profile

A - 0 to 16 inches: sand
C - 16 to 60 inches: sand, fine sand, loamy sand
C - 16 to 60 inches:
C - 16 to 60 inches:

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: SANDY (R017XE080CA)
Hydric soil rating: No

Minor Components

Honcut

Percent of map unit: 4 percent
Hydric soil rating: No

San emigdio

Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed, calcareous

Percent of map unit: 3 percent
Hydric soil rating: No

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APPENDIX "E"

HYDROLOGY AND WATER QUALITY REPORT

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HYDROLOGY AND WATER QUALITY REPORT FOR DEER CREEK MINE EXPANSION (PMR 19-001) PROJECT

PREPARED FOR:

DEER CREEK ROCK CO. INC.
27671 AVENUE 120/ROAD 272
PORTERVILLE, TULARE COUNTY, CALIFORNIA 93257
APN 305-190-022 & 305-190-021

PREPARED BY:

MASON GEOSCIENCE
PO BOX 1020
EXETER, CA 93221

JULY 16, 2019

SUBMITTED TO:
DEER CREEK ROCK CO. INC.
27671 AVENUE 120/ROAD 272
PORTERVILLE, TULARE COUNTY,
CALIFORNIA 93257

MASON GEOSCIENCE

July 16, 2019

To:
Mr. Jack Baker
Owner
Deer Creek Rock Co. Inc.
27671 Avenue 120/Road 272
Porterville, CA 93257

From:
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SUBJECT: HYDROLOGY AND WATER QUALITY REPORT FOR DEER CREEK MINE EXPANSION (PMR 19-001) PROJECT, 27671 AVENUE 120, PORTERVILLE, TULARE COUNTY, CALIFORNIA, APN 305-190-022 AND 305-190-021.

Dear Mr. Baker:

The attached report has been prepared to assess the hydrology and water quality impacts to the site from the proposed project. The report includes discussion of the natural setting of the site and the California Environmental Quality Act (CEQA) checklist is included with discussion regarding potential environmental impacts from the proposed project. The environmental impacts with regard to CEQA include thresholds of significance as identified in the CEQA checklist and are discussed herein. If you have any questions or concerns, please contact me at (559) 936-3695.

Respectfully submitted,

Fred Mason, PG, CEG, CHG
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I. INTRODUCTION

In accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), the County of Tulare Resource Management Agency (RMA) will be preparing an Environmental Impact Report (EIR) to evaluate the environmental effects associated with a proposed ±20-acre expansion to the footprint and operations of the existing Deer Creek Mine facility located south of Porterville, Tulare County, California.

The project is being proposed by the applicant, Deer Creek Rock Co. Inc., who currently operates a rock and gravel surface mining operation on 118-acres (FEIR, 2015). The current project is permitted by PMR 01-001, PMR 09-002, PSP 01-055 (ZA), and PMR 14-002. The proposed project consists of a ±20-acre expansion to the footprint and operations of the existing and currently operational Deer Creek Mine Facility to increase production of the existing mining permit and will include both lateral and depth expansion (NOP, 2019).

Site details are as follows:

Current Facility Name:----------Deer Creek Mine
Address:----------27671 Avenue 120, Porterville, California, 93257
County:----------Tulare County
Assessor's Parcel Numbers----------305-190-022 and 305-190-021
Township, Range, Section: ----------Township 22 South, Range 28 East, Section 21
Baseline and Meridian:----------Mount Diablo Baseline and Meridian
Owner:----------Jack Baker
Deer Creek Rock Co. Inc.
27671 Avenue 120/Road 272
Porterville, California, 93257
(530) 241-2112

A. Purpose and Scope

This report has been prepared to assess potential hydrologic and water quality impacts to the site associated with the increased discharge of wastewater to land from the proposed mine expansion.

The assessment required reviewing hydrologic and water quality information for the site and surrounding area and includes qualitative and quantitative hydrologic data. These data, submitted herein, include discussion of the natural setting of the site. A California Environmental Quality Act (CEQA) checklist is included with discussion regarding potential environmental impacts from the proposed project (CEQA, 2019). The environmental impacts with regard to CEQA include thresholds of significance as identified in the CEQA checklist and relate to the following criteria.

Would the project:

- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site?
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would 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?
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

B. Regulatory Requirements

1. California Environmental Quality Act (CEQA) Requirements

This section addresses potential impacts to Hydrology and Water Quality. As required in Section 15126, all phases of the proposed project will be considered when evaluating its environmental impact.

As noted in 15126.2 (a): An EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area, as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis is commenced. Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects. The discussion should include relevant specifics of the area, the resources involved, physical changes, alterations to ecological systems, and changes induced in population distribution, population concentration, the human use of the land (including commercial and residential development), health and safety problems caused by the physical changes, and other aspects of the resource base such as water, historical resources, scenic quality, and public services. The EIR shall also analyze any significant environmental effects the project might cause by bringing development and people into the area affected. For example, an EIR on a subdivision astride an active fault line should identify as a significant effect the seismic hazard to future occupants of the subdivision. The subdivision would have the effect of attracting people to the location and exposing them to the hazards found there. Similarly, the EIR should evaluate any potentially significant impacts of locating development in other areas susceptible to hazardous conditions (e.g., floodplains, coastlines, wildfire risk areas) as identified in authoritative hazard maps, risk assessments or in land use plans addressing such hazards areas." (CEQA, 2019).

The regulatory setting provides a description of applicable Federal, State and Local regulatory policies that

were developed in part from information contained in the Tulare County 2030 General Plan, Tulare County General Plan Background Report and/or Tulare County General Plan Revised DEIR incorporated by reference and summarized below. The hydrologic conditions provides a description of the Hydrology and Water Quality in the County.

2. Federal Agencies & Regulations

i. Clean Water Act/ National Pollutant Discharge Elimination System

The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The Federal Water Pollution Control Act of 1948 was the first major U.S. law to address water pollution. Growing public awareness and concern for controlling water pollution led to sweeping amendments in 1972. As amended in 1972, the law became commonly known as the Clean Water Act (CWA). Under the CWA, the Environmental Protection Agency (EPA) has implemented pollution control programs such as setting wastewater standards for industry. EPA has also developed national water quality criteria recommendations for pollutants in surface waters.

The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. EPA's National Pollutant Discharge Elimination System (NPDES) permit program controls discharges. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters (CWA, 2019).

ii. National Flood Insurance Program

The National Flood Insurance Program (NFIP) was created as a result of the passage of the National Flood Insurance Act of 1968. Congress enacted the NFIP primarily in response to the lack of availability of private insurance and continued increases in federal disaster assistance due to floods. At the time, flooding was viewed as an uninsurable risk and coverage was virtually unavailable from private insurance markets following frequent widespread flooding along the Mississippi River in the early 1960s. The NFIP is a Federal program, managed by the Federal Emergency Management Administration (FEMA), and has three components: to provide flood insurance, to improve floodplain management, and to develop maps of flood hazard zones (NAIC, 2019).

iii. Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources: rivers, lakes, reservoirs, springs, and groundwater wells. SDWA does not regulate private wells which serve fewer than 25 individuals. SDWA authorizes the United States Environmental Protection Agency to set national health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants that may be found in drinking water. EPA, States, and water systems then work together to make sure that these

standards are met (US EPA, 2004).

iv. Environmental Protection Agency

The mission of EPA is to protect human health and the environment. EPA's work is to ensure that:

- All Americans are protected from significant risks to human health and the environment where they live, learn, and work;
- National efforts to reduce environmental risk are based on the best available scientific information;
- Federal laws protecting human health and the environment are enforced fairly and effectively;
- Environmental protection is an integral consideration in U.S. policies concerning natural resources, human health, economic growth, energy, transportation, agriculture, industry, and international trade, and these factors are similarly considered in establishing environmental policy;
- All parts of society – communities, individuals, businesses, and state, local and tribal governments have access to accurate information sufficient to effectively participate in managing human health and environmental risks;
- Environmental protection contributes to making our communities and ecosystems diverse, sustainable and economically productive; and
- The United States plays a leadership role in working with other nations to protect the global environment (US EPA, 2019).

3. State Agencies & Regulations

i. Surface Mining and Reclamation Act (SMARA)

The Surface Mining and Reclamation Act of 1975 (SMARA, Public Resources Code, Sections 2710-2796) provides a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition.

SMARA also encourages the production, conservation, and protection of the state's mineral resources. Public Resources Code Section 2207 provides annual reporting requirements for all mines in the state, under which the State Mining and Geology Board is also granted authority and obligations.

SMARA Chapter 9, Division 2 of the Public Resources Code, requires the State Mining and Geology Board to adopt State policy for the reclamation of mined lands and the conservation of mineral resources. These policies are prepared in accordance with the Administrative Procedures Act, (Government Code) and are found in California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1 (SMARA, 2019).

ii. Water Quality Control Plan

As stated in the State of California Water Quality Control Plan, Third Edition, "Water quality control plans, or basin plans, contain California's administrative policies and procedures for protecting state waters.

Basin plans are required by the state Porter-Cologne Water Quality Control Act (California Water Code Section 13240). In addition, Section 303 of the federal Clean Water Act requires states to adopt water quality standards that "consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses.""

"Each of California's nine regional water quality control boards must formulate and adopt a basin plan for all areas within its region. The basin plans must conform with statewide policy set forth by the legislature and by the State Water Resources Control Board. Basin plans consist of designated beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving the objectives {California Water Code, Section 13050(j)}."

"Beneficial uses, together with their corresponding water quality objectives, meet federal regulatory criteria for water quality standards. Hence, California's basin plans serve as regulatory references for meeting both State and federal requirements for water quality control {40 CFR Parts 130 and 131}.One significant difference between the state and federal programs is that California's basin plans establish standards for ground waters in addition to surface waters." (Control Plan, 2018).

iii. State Water Quality Control Board

The State Water Resources Control Board was established in 1967 by the Legislature. The Board succeeded to the functions of the former State Water Rights Board and the State Water Quality Control Board. The mission of the State Water Board is to ensure the highest reasonable quality for waters of the State, while allocating those waters to achieve the optimum balance of beneficial uses. The joint authority of water allocation and water quality protection enables the Water Board to provide comprehensive protection for California's waters (State Water Board, 2019).

iv. Regional Water Quality Control Board

The nine California Regional Water Quality Control Boards (Regional Boards) were originally established in the Dickey Water Pollution Control Act of 1949. The mission of the Regional Boards is to develop and enforce water quality objectives and implementation plans that will best protect the State's waters, recognizing local differences in climate, topography, geology and hydrology. Each Regional Board has seven part-time members appointed by the Governor and confirmed by the Senate. Regional Boards develop "basin plans" for their hydrologic areas, issue waste discharge requirements, take enforcement action against violators, and monitor water quality. (State Water Board, 2019).

The primary duty of the Regional Board is to protect the quality of the waters within the Region for all beneficial uses. This duty is implemented by formulating and adopting water quality plans for specific ground or surface water basins and by prescribing and enforcing requirements on all agricultural, domestic and industrial waste discharges (Central Valley Water Board, 2019).

v. The Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, also known as the "Water Act" requires water resources of the State be put to beneficial use to the fullest extent of which they are capable. Waste, unreasonable

use, or unreasonable method of use of water shall be prevented. Conservation of water is to be exercised with a view to the reasonable and beneficial use in the interest of the people and for the public welfare. The right to water or to the use or flow of water in or from any natural stream or watercourse in California shall be limited as shall be reasonably required for the beneficial use to be served. Such right does not and shall not extend to the waste, unreasonable use, or unreasonable method of use or unreasonable method of diversion of water. Together, the ten water boards have primary responsibility for implementing and enforcing the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). Specific responsibilities and procedures of the Regional Boards and the State Water Resources Control Board are contained in the Porter-Cologne Water Quality Control Act (Water Code, 2019).

vi. California Department of Water Resources

The Department of Water Resources (DWR) is responsible for managing and protecting California's water resources. DWR works with other agencies to benefit the State's people and to protect, restore, and enhance the natural and human environments (DWR About, 2019).

DWR's major responsibilities include:

- Overseeing the statewide process of developing and updating the California Water Plan (Bulletin 160 series).
- Planning, designing, constructing, operating, and maintaining the State Water Project.
- Protecting and restoring the Sacramento-San Joaquin Delta.
- Regulating dams, providing flood protection, and assisting in emergency management.
- Working to preserve the natural environment and wildlife.
- Educating the public about the importance of water, water conservation, and water safety.
- Providing grants and technical assistance to service local water needs.
- Collecting, analyzing, and reporting data in support of their mission to manage and protect California's water resources.

vii. Sustainable Groundwater Management Act

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley), collectively known as the Sustainable Groundwater Management Act (SGMA). SGMA requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For critically over-drafted basins, that will be 2040. For the remaining high and medium priority basins, 2042 is the deadline. SGMA empowers local agencies to form Groundwater Sustainability Agencies (GSAs) to manage basins sustainably and requires those GSAs to adopt Groundwater Sustainability Plans (GSPs) for crucial groundwater basins in California (SGMA, 2019).

viii. SB 610 (Costa, 2001)

This Bill requires additional information to be included as part of an urban water management plan if groundwater is identified as a source of water available to the supplier. This law also requires an urban

water supplier to include in the plan a description of all water supply projects and programs that may be undertaken to meet total projected water use (Costa, 2001).

4. Local Policy & Regulations

i. Tulare County General Plan Policies

The General Plan (2012) has a number of policies that apply to projects within Tulare County. General Plan policies that relate to the proposed project are listed below.

AG-1.17 Agricultural Water Resources - The County shall seek to protect and enhance surface water and groundwater resources critical to agriculture.

ERM-2.7 Minimize Adverse Impacts - The County will minimize the adverse effects on environmental features such as water quality and quantity, air quality, flood plains, geophysical characteristics, biotic, archaeological, and aesthetic factors.

ERM-7.3 Protection of Soils on Slopes - Unless otherwise provided for in this General Plan, building and road construction on slopes of more than 30 percent shall be prohibited, and development proposals on slopes of 15 percent or more shall be accompanied by plans for control or prevention of erosion, alteration of surface water runoff, soil slippage, and wildfire occurrence.

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-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:

- Critical facilities (those facilities which should be open and accessible during emergencies) shall not be permitted.
- Passive recreational activities (those requiring non-intensive development, such as hiking, horseback riding, picnicking) are permissible.
- 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-5.4 Multi-Purpose Flood Control Measures - The County shall encourage multipurpose flood control projects that incorporate recreation, resource conservation, preservation of natural riparian habitat, and scenic values of the County's streams, creeks, and lakes. Where appropriate, the County shall also encourage the use of flood and/or stormwater retention facilities for use as groundwater recharge facilities.

HS-5.9 Floodplain Development Restrictions - The County shall ensure that riparian areas and drainage areas within 100-year floodplains are free from development that may adversely impact floodway capacity or characteristics of natural/riparian areas or natural groundwater recharge areas.

HS-5.11 Natural Design - The County shall encourage flood control designs that respect natural curves and vegetation of natural waterways while retaining dynamic flow and functional integrity.

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-1.11 Groundwater Overdraft - The County shall consult with water agencies within those areas of the County where groundwater extraction exceeds groundwater recharge, with the goal of reducing and ultimately reversing groundwater overdraft conditions in the County.

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-2.5 Major Drainage Management - The County shall continue to promote protection of each individual drainage basin within the County based on the basins' unique hydrologic and use characteristics.

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.

WR-2.8 Point Source Control - The County shall work with the Regional Water Quality Control Board to

ensure that all point source pollutants are adequately mitigated (as part of the California Environmental Quality Act review and project approval process) and monitored to ensure long-term compliance.
WR-3.3 Adequate Water Availability - The County shall review new development proposals to ensure the intensity and timing of growth will be consistent with the availability of adequate water supplies. Projects must submit a Will-Serve letter as part of the application process and provide evidence of adequate and sustainable water availability prior to approval of the tentative map or other urban development entitlement.

WR-3.4 Water Resource Planning - The County shall continue participation in State, regional, and local water resource planning efforts affecting water resource supply and quality.

WR-3.6 Water Use Efficiency - The County shall support educational programs targeted at reducing water consumption and enhancing groundwater recharge.

WR-3.9 Establish Critical Water Supply Areas - The County shall designate Critical Water Supply Areas to include the specific areas used by a municipality or community for its water supply system, areas critical to groundwater recharge, and other areas possessing a vital role in the management of the water resources in the County, including those areas with degraded groundwater quality.

WR-3.10 Diversion of Surface Water - Diversions of surface water or runoff from precipitation should be prevented where such diversions may cause a reduction in water available for groundwater recharge.

PFS-4.7 NPDES Enforcement - The County shall continue to monitor and enforce provisions to control non-point source water pollution contained in the U.S. Environmental Protection Agency National Pollution Discharge Elimination System (NPDES) program.

ii. Tulare County Environmental Health

The mission of the Tulare County Division of Environmental Health Services (TCDEHS) is to enhance the quality of life in Tulare County through implementation of environmental health programs that protect public health and safety as well as the environment. This goal is accomplished by overseeing and enforcing numerous different programs, from food facility inspections to hazardous waste. All inspectors are licensed and/or certified in the field they practice in and participate in continuing education to maintain licensure (TCDEHS, 2019).

II. SITE DESCRIPTION

The study area is hydrologically located within the Deer Creek watershed along the eastern boundary of the Tule Subbasin that is part of the Tulare Lake Hydrologic Region of the San Joaquin Valley. The San Joaquin Valley comprises the southern extent of the Great Central Valley of California. The City of Porterville is located approximately 5-miles northwest of the site; both of which are situated within the eastern foothills region of Tulare County. Predominant land use around the site is identified as "Foothill Agriculture" (General Plan, 2012).

The site is geographically located near the eastern-most extent of the San Joaquin Valley within the foothills area at the base Sierra Nevada Mountain Range (Figure 1). The mine site is topographically located along the northernmost portion of Tennessee Ridge on Tennessee Knob, just south of Deer Creek (Figure 1).

The current site occupies approximately 118-acres with a proposed ±20-acre expansion to the east and southeast. The main office and rock processing facility are located along the northern portion of the site. Rock mining, crushing, and storage are conducted throughout the site. Equipment storage and a laboratory are located along the western portion of the site.

There are three supply wells located near the northwest portion of the site. The supply wells are connected to an above ground water storage tank situated near the top of Tennessee Ridge at the southern portion of the site (Figure 2). Two settling pond are located at the southern end of the mine site used for storage of process water from washing crushed aggregate. The north settling pond covers approximately 0.45-acres and south settling pond covers approximately 1.0-acre.

A. Site Location and Access

To access the site from the north, go south from Porterville at the intersection of Highway 190 (East Poplar Avenue) and South Plano Street. Continue south on South Plano Street approximately 3.3-miles until the road curves toward the east onto Avenue 116. From the curve after entering Avenue 116, go approximately 1.0-mile east until the road curves again to the south. Near the center of the curve, turn east onto Road 264 (Holcomb Street) and head north approximately 0.65-miles to the intersection of Road 264 (Holcomb Street) and Deer Creek Drive. Go east on Deer Creek Drive approximately 1.75-miles to the mine entrance located on the south side of the road.

To access the site from the south, go north from Fountain Springs at the intersection of Avenue 56 and Old Stage Road. Go north on Old Stage Road (Holcomb Street) approximately 8.5-miles until the road curves to the west onto Avenue 116. Near the center of the curve, turn east onto Road 264 (Holcomb Street) and head north approximately 0.65-miles to the intersection of Road 264 (Holcomb Street) and Deer Creek Drive. Go east on Deer Creek Drive approximately 1.75-miles to the mine entrance located on the south side of the road (Figure 1).

B. Proposed Development

The proposed development titled, *Deer Creek Mine Expansion (PMR 19-001) Project*, will include approximately 20-acres of expansion of the existing rock mining facility to the east and southeast (Figure 2). As indicated in the Notice of Preparation (NOP, 2019), the proposed permit amendments requested

by PMR 19-001 will: 1) Allow consistency between PMR 01-001, PMR 09-002, PSP 01-055(ZA), and PMR 14- 002; 2) Result in an approximately 20-acre expansion through the use of a lot line adjustment toward the east and southeast on land currently used for grazing; increase annual production by 500,000 tons per year (from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year); 3) Increase truck hauling by 224 round-trips per day (from a maximum of 376 round-trips per day to a maximum of 600 round-trips per day), with a maximum of 60,000 truck trips per year; 4) Result in an increase in the maximum depth of the mine to 300 feet AMSL; 5) Result in a change to the estimated total rock production of 40,000,000 tons of rock to 75,000,000 tons of rock material during the estimated 50-years of operation; and 6) Result in no change to the approved reclamation plan other than to include the expanded area (NOP, 2019).

With regard to site hydrology and water quality, the proposed project is an expansion of existing operations to the east and southeast. Mining operations in the expansion area will be identical to existing operations. The only difference in operations will be an increase in mine and heavy-duty truck trips.

Water supply will come from the three existing on-site wells and water used in operations will be recycled from stored water within the two on-site settling ponds. It was reported by mine personnel that there are no Onsite Wastewater Treatment Systems (OWTS) on site.

The proposed operations do not include new or expanded use of water or wastewater treatment facilities. The project will be required to comply with all applicable Regional Water Quality Control Board regulations, including Storm Water Pollution Prevention Plan (SWPPP), Storm Water Monitoring Plan (SWMP), Title 27 requirements, and Waste Discharge requirements from a Statewide General Order for Aggregate Mining Facilities, currently being prepared by the State Water Quality Control Board. A Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) shows the proposed expansion area is outside of the 100-year Flood Hazard Zone (NOP, 2019).

C. Climate

Runoff from the Sierra Nevada mountains to the west provides good quality water for irrigation along with local groundwater. The region around the site experiences a long growing season (April through October), warm to hot summers, and a fall harvest period usually sparse in rain (Water Plan, 2013).

The proposed project is located in an area with a Mediterranean climate. Warm to hot dry summers are followed by cool moist winters. Precipitation data for the site was obtained from the California Irrigation Management Information System (CIMIS) for Station #169 located in Porterville, California. Annual average precipitation in the Porterville area is approximately 7.1 inches, almost all of which falls between the months of October through May (CIMIS, 2019). Virtually all precipitation falls in the form of rain.

Wind direction and velocity in the eastern section of the Central Valley, near the site, varies significantly from the western portion of the County. The western side receives northwesterly winds. The eastern side of the County exhibits more variable wind patterns, but the wind direction is typically up-slope during the day and down-slope in the evening. Generally, the wind direction in the eastern portion of the County is westerly; however terrain differences can create moderate directional changes (FEIR, 2015).

III. HYDROLOGIC CONDITIONS

A. Hydrologic Setting

The City of Porterville and subject site are located along the eastern boundary of the Tule Subbasin (5-22.13) of the Tulare Lake Hydrogeologic Region. The eastern boundary, near which the site is located, is at the edge of the alluvium and crystalline bedrock contact along the Sierra Nevada foothills. West-flowing Tule River, Deer Creek and White River are the major drainages in the subbasin that empty toward the Tulare lakebed located along the western portion of the San Joaquin Valley. Groundwater flow is generally westward. Groundwater elevation contours diverge from the path of the Tule and White Rivers in the north and south portions of the subbasin, respectively, suggesting that these drainages act as losing streams throughout most of their extent. Groundwater recharge is primarily from stream recharge and from deep percolation of applied irrigation water (DWR, 2014).

The Tulare Lake Hydrologic Region covers approximately 10.9 million acres (17,000 square miles) and includes all of Kings and Tulare counties and most of Fresno and Kern counties. Significant geographic features include the southern half of the San Joaquin Valley, the Temblor Range to the west, the Tehachapi Mountains to the south, the southern Sierra Nevada to the east, and Coast Ranges to the west. Major population centers include Fresno, Bakersfield, and Visalia. The cities of Fresno and Visalia are entirely dependent on groundwater for their supply, with Fresno being the second largest city in the United States reliant solely on groundwater (DWR, 2003).

The Tulare Lake region is one of the nation's leading agricultural production areas, growing a wide variety of crops on about three million irrigated acres. Agricultural production has been a mainstay of the region since the late 1800s. However, since the mid-1980s, other economic sectors, particularly the service sector, have been growing (Water Plan, 2013).

B. Geologic Setting

The site is geologically located within the western foothills at the base of the Sierra Nevada Mountain Range. Site geology was reviewed from the Geologic Map of California, Fresno Sheet, Scale 1:250,000, published by the California Geological Survey, 1965, and Geologic Map of California, Bakersfield Sheet, Scale 1:250,000, published by the California Geological Survey, 1964 (Matthews and Burnett, 1964 and 1965). Subsurface lithology of the site is bedrock mantled by a relatively thin layer of residual soils derived from weathering of the bedrock parent material. The property area is mapped as primarily Pre-Cretaceous metavolcanic rocks (mv) composed of metamorphosed volcanic and sedimentary rocks with locally intruded ultrabasic rocks with lesser exposures of Mesozoic ultrabasic intrusive rocks (ub) composed of altered serpentine. Recent alluvium (Qal) composed of stream alluvium is located north of the site adjacent to Deer Creek and west of the site within the Deer Creek Floodplain.

C. Topographic Setting and Drainage Patterns

The site is topographically located along north trending Tennessee Ridge (Figure 1). Deer Creek is located at the north base of Tennessee Ridge. Natural topography of the ridge slopes down toward Deer Creek toward the northwest, north, and northeast. Tennessee Ridge is a natural barrier to Deer Creek that has

altered the stream course in a semi-circular arc around the north end of the ridge. Mining activities have altered the natural slopes along the north, northwest, and west flank of the ridge. The natural slope of the ground surface prior to mining activities, measured from the Success Dam and Fountain Springs 2018 7.5 minute quadrangle topographic maps, was approximately 25% (1H:0.25V), sloping down to the east, north, and west toward Deer Creek (Figure 1).

Review of Google Earth Pro imagery dated February 8, 2018, indicates the land surface elevation at the base of the mine cut within the quarry floor is approximately 630 feet above mean sea level (AMSL). Elevation to the north adjacent to Deer Creek is approximately 550-feet (AMSL). Based on these elevations and horizontal distance across the main portion of the mine site, the calculated current surface slope is approximately 5% down to the northwest, or 1H:0.05V. Surface water drainage at the site is managed by grading and directing surface runoff toward the settling ponds located south of the main mine site. Topography of the north side of the mine site slopes down toward to the north toward Deer Creek.

Regional topography around the mine site is expressed as hill and valley with elevations generally increasing towards the east, upslope along the foothills of the Sierra Nevada Mountain Range. Topography generally follows slopes of local hills and valleys around the mine site, decreasing in elevation toward the west into the main portion of the San Joaquin Valley. Surface water generally follows the topography draining from the higher elevation within the eastern Sierra Nevada Mountain Range to the west into the San Joaquin Valley.

D. Surface Water

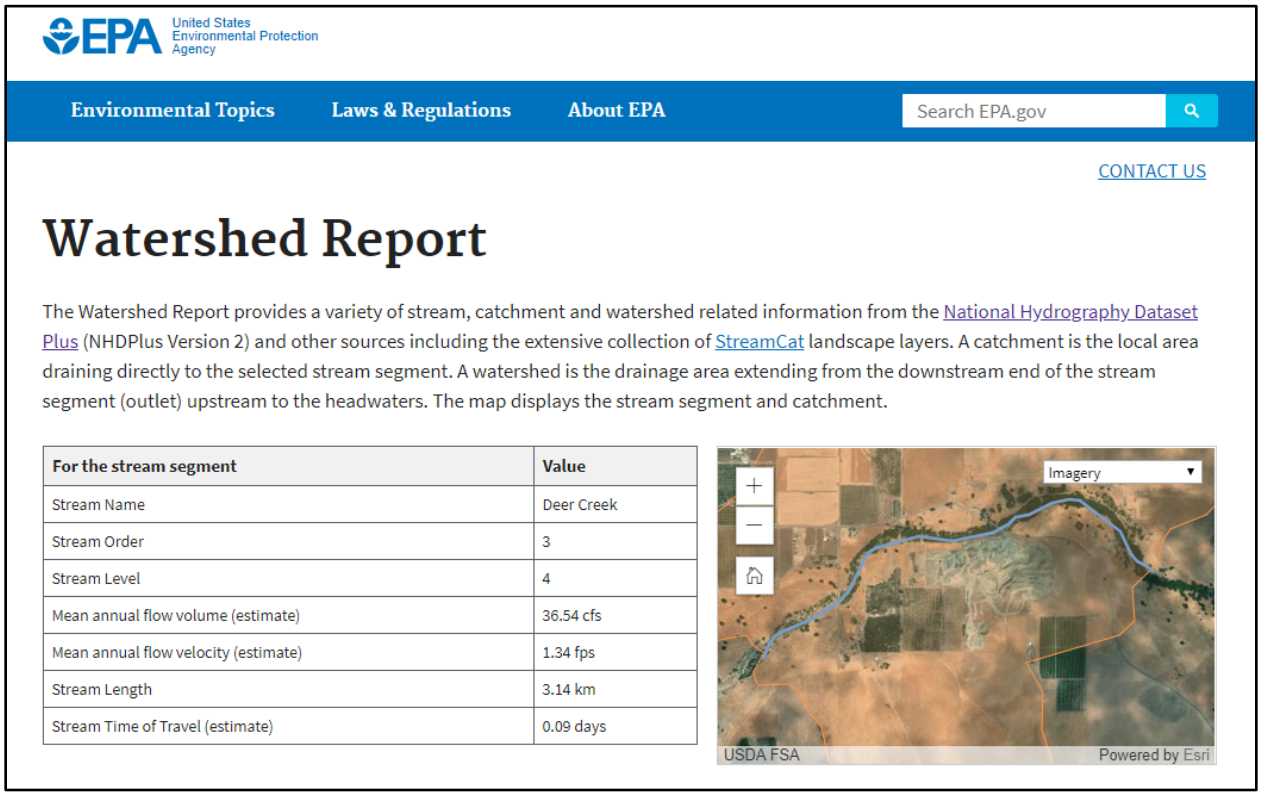
Regional rivers draining into the Tulare Lake region include the Kings, Kaweah, Tule, and Kern rivers. Geographic features in the southern portion of the region include lakebeds of the former Buena Vista/Kern and Tulare lakes that comprise the southern half of the region; the Coast Ranges to the west; the Tehachapi Mountains to the south; and the southern Sierra Nevada to the east (Water Plan , 2013).

The Tulare Lake region is divided into several main hydrologic subareas: the alluvial fans from the Sierra foothills and the basin subarea (in the vicinity of the Kings, Kaweah, and Tule rivers and their distributaries); the Tulare Lakebed; and, the southwestern uplands. The alluvial fan/basin subarea is characterized by southwest to south flowing rivers, creeks, and irrigation canal systems that convey surface water originating from the Sierra Nevada Mountains. The dominant hydrologic features in the alluvial fan/basin subarea are the Kings, Kaweah, Tule, and Kern rivers and their major distributaries draining from the western flanks of the Sierra Nevada Mountains. Geographically related to the site, Tule River begins in Sequoia National Forest and flows southwest through Lake Success toward Tulare Lake (Water Plan, 2013).

Deer Creek bounds the north side of the mine site. It is an ephemeral losing stream that flows west from the upper reaches in the Sierra Nevada Mountains toward Terra Bella, Earlimart, and Pixley.

The watershed map on Figure 3 shows a portion of the Tule subbasin watersheds. Surface water flowing to geographic areas of the site begins in Upper Deer-Upper White Hydrologic Unit 1803005. Figure 3 shows the site within Hydrologic Unit 180300050404 (Hungry Hollow-Deer Creek) that bounds Deer Creek. (USGS Watersheds, 2019). A United States Environmental Protection Agency (US EPA) watershed report

was completed for a 3.14-kilometer reach of stream segment along Deer Creek that borders the north side of the mine. The catchment includes the mine site and covers 11.11 square kilometers. Figure 4 shows the area of interest and estimated mean annual flow volume along the catchment of 36.54 cubic feet per second (26,471 acre-feet per year) (US EPA, Watershed Report, 2019). Harder et. al. (2017) reported average annual flow at a gaging station near Fountain Springs, located upstream from the site, at 19,728 acre-feet per year from years 1990/91 through 2009/10. Average annual groundwater recharge of native Deer Creek water was estimated to be 18,203 acre-ft/yr.



For the stream segment	Value
Stream Name	Deer Creek
Stream Order	3
Stream Level	4
Mean annual flow volume (estimate)	36.54 cfs
Mean annual flow velocity (estimate)	1.34 fps
Stream Length	3.14 km
Stream Time of Travel (estimate)	0.09 days

Figure 4. US EPA Watershed Report for 3.14 kilometer stream segment along Deer Creek. Mine site is within catchment boundary.

1. Surface Water Quality

Surface water quality in the Tulare Lake Basin is generally good, with excellent quality exhibited by most eastside streams. Regional Water Quality Control Board water quality objectives are presented below (WQCP, Tulare Lake, 2018).

3.1.1 Ammonia – Waters shall not contain un-ionized ammonia in amounts which adversely affect beneficial uses. In no case shall the discharge of wastes cause concentrations of un-ionized ammonia (NH_3) to exceed 0.025 mg/l (as N) in receiving waters.

3.1.2 Bacteria – In waters designated REC-1, the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall

more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.

3.1.3 Biostimulatory Substances – Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

Chemical Constituents:

Waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. The Regional Water Board will consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for detrimental levels of chemical constituents developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U. S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.

At a minimum, water designated "MUN" shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into the plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated MUN shall not contain lead in excess of 0.015 mg/l. The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances. To ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

3.1.5 Color – Waters shall be free of discoloration that causes nuisance or adversely affects beneficial uses.

3.1.6 Dissolved Oxygen – Waste discharges shall not cause the monthly median dissolved oxygen concentrations (DO) in the main water mass (at centroid of flow) of streams and above the thermocline in lakes to fall below 85 percent of saturation concentration, and the 95 percentile concentration to fall below 75 percent of saturation concentration. The DO in surface waters shall always meet or exceed the concentrations in Table 3-1 for the listed specific water bodies and the following minimum levels for all aquatic life:

- Waters designated WARM 5.0 mg/l
- Waters designated COLD or SPWN 7.0 mg/l

Where ambient DO is less than these objectives, discharges shall not cause a further decrease in DO concentrations.

3.1.7 Floating Material – Waters shall not contain floating material, including but not limited to solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses.

3.1.8 Oil and Grease – Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

3.1.9 pH – The pH of water shall not be depressed below 6.5, raised above 8.3, or changed at any time more than 0.3 units from normal ambient pH. In determining compliance with the above limits, the Regional Water Board may prescribe appropriate averaging periods provided that beneficial uses will be fully protected.

3.1.10 Pesticides – Waters shall not contain pesticides in concentrations that adversely affect beneficial uses. There shall be no increase in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses. (For the purposes of this objective, the term pesticide is defined as any substance or mixture of substances used to control objectionable insects, weeds, rodents, fungi, or other forms of plant or animal life.) The Regional Water Board will consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for detrimental levels of chemical constituents developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U. S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.

At a minimum, waters designated MUN shall not contain concentrations of pesticide constituents in excess of the maximum contaminant levels (MCLs) specified in Table 64444-A (Organic Chemicals) of Section 64444 of Title 22 of the California Code of Regulations, which is incorporated by reference into this plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances. To ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

In waters designated COLD, total identifiable chlorinated hydrocarbon pesticides shall not be present at concentrations detectable within the accuracy of analytical methods prescribed in Standard Methods for the Examination of Water and Wastewater, 18th Edition, or other equivalent methods approved by the Executive Officer.

3.1.11 Radioactivity – Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life nor which result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

At a minimum, waters designated MUN shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 64442 of Section 64442 and Table 64443 of Section 64443 of Title 22, California Code of Regulations, which are incorporated by reference into the plan. This

incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.

3.1.12 Salinity – Waters shall be maintained as close to natural concentrations of dissolved matter as is reasonable considering careful use of the water resources. "The only reliable way to determine the true or absolute salinity of a natural water is to make a complete chemical analysis. However, this method is time-consuming and cannot yield the precision necessary for accurate work" (Standard Methods for the Examination of Water and Wastewater, 18th Edition). Conductivity is one of the recommended methods to determine salinity.

3.1.13 Sediment – The suspended sediment load and suspended sediment discharge rate of waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

3.1.14 Settleable Material – Waters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

3.1.15 Suspended Material – Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.

3.1.16 Tastes and Odors – Waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance, adversely affect beneficial uses, or impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to domestic or municipal water supplies.

3.1.17 Temperature – Natural temperatures of waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. Temperature objectives for COLD interstate waters, WARM interstate waters, and Enclosed Bays and Estuaries are as specified in the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays of California, including any revisions.

Elevated temperature wastes shall not cause the temperature of waters designated COLD or WARM to increase by more than 5°F above natural receiving water temperature. In determining compliance with the above limits, the Regional Water Board may prescribe appropriate averaging periods provided that beneficial uses will be fully protected.

3.1.18 Toxicity – All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, biotoxicity tests of appropriate duration, or other methods as specified by the Regional Water Board. The Regional Water Board will also consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for toxic substances developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs the U.S. Food and Drug Administration, the National Academy of Sciences, the U. S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.

The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors shall not be less than that for the same water body in areas unaffected by the waste discharge, or, when necessary, for other control water that is consistent with the requirements for "dilution water" as described in Standard Methods for the Examination of Water and Wastewater, 18th Edition. As a minimum, compliance shall be evaluated with a 96-hour bioassay.

In addition, effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate; additional numerical receiving water quality objectives for specific toxicants will be established as sufficient data become available; and source control of toxic substances will be encouraged.

3.1.19 Turbidity – Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.
- Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is equal to or between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

In determining compliance with the above limits, the Regional Water Board may prescribe appropriate averaging periods provided that beneficial uses will be fully protected.

2. Surface Water Supply

Near the site and throughout the San Joaquin Valley, surface-water supplies in the past have been generally inadequate to meet irrigation demands, and overdraft on groundwater supplies has been widespread. As a result, water level fluctuations have occurred in response to the groundwater withdrawals. The water table declines rapidly in late spring and summer and recovers as pumping ceases late in the autumn. In over-drafted areas, a year by-year decline has occurred. Imports of Central Valley Project surface water through the Friant Kern Canal have supplied additional recharge to the groundwater basins locally and helped to reduce pumping overdraft (Davis, et. al., 1959).

Surface water runoff in the Porterville area generally flows from east to west and terminates in the Tulare Lake Basin. Major surface water resources in the area of the mine site are Tule River approximately 2.75-miles to the north, Deer Creek that bounds the north side of the property, and White River approximately 10.6-miles to the south. From its headwaters in the Sierra Nevada mountains, the Tule River flows into Lake Success. Through controlled releases at the Success dam, the river flows through Porterville and into the Lower Tule River Irrigation District, ultimately discharging onto the Tulare Lakebed during periods of above-normal precipitation. Deer creek emanates from higher elevations within the Sierra Nevada Mountains to the east. It is an ephemeral stream that flow westerly toward Terra Bella and Pixley. The White river also emanates at higher elevations with the western Sierra Nevada Mountains and flows west out of the foothills near Richgrove, California. From the Richgrove area, it flows further west along the southern boundary of the Tule Subbasin.

Mitigating groundwater overdraft has become an important objective for the state, counties, and the developer of this project. Since groundwater overdraft mitigation has become a common practice, water usage has become more conservative and alternative methods of reuse and recycling have become realities. Water reuse, which is already conducted at the project site, is a proposed mitigation item for this project to reduce the water demand on wells by reducing and eliminating the water volumes required and recycling water for aggregate washing.

3. Flooding

The Federal Emergency Management Agency (FEMA) provides a Flood Insurance Rate Map (FIRM) which identifies different flood zone areas. The proposed project will not contain housing. The northwest existing boundary of the project near Deer Creek lies within flood area Zone A (shaded in blue on Figure 5A); a Special Flood Hazard Area subject to inundation by the 1% annual chance flood according to the Federal Emergency Management Agency (FEMA) flood zone designation. The 1% annual flood (100 year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. Detailed analyses are not performed for such areas. As a result, no depths or base flood elevation are shown within these zones. Figure 5A shows the FEMA FIRM community panel number 6107C1665E, effective date June 16, 2009.

Figure 5B shows the proposed expansion project along the east boundary of the current facility is located in FEMA FIRM community panel number 06107C1665E, dated June 16, 2009. The flood map indicates the site is in Zone X; an area of minimal flood hazard that is determined to be outside the 0.2% annual chance floodplain.

E. Groundwater

1. Groundwater Occurrence

Groundwater from the Tule Subbasin has been the primary source of water for the site. Groundwater will remain the primary source of water for the project after development. The Tule Subbasin is part of the Tulare Lake Basin within the Central Valley and encompasses an area of 467,000 acres on the valley floor with an average annual precipitation of 11 inches (DWR, 2014).

The Tulare Lake Hydrologic Region contains 12 groundwater basins and 7 subbasins that underlie approximately 8,400 square miles, or about 50 percent of the region. The majority of the groundwater in the region is stored in alluvial aquifers. Pumping from alluvial aquifers in the region accounts for about 38 percent of California's total average annual groundwater extraction. The most heavily used groundwater basins in the region include Kings, Westside, Kaweah, Tulare Lake, Tule, and Kern County. These basins account for approximately 98 percent of the average 6.3 million acre-feet of groundwater pumped annually during the 2005-2010 period. Groundwater pumping rates in the various subbasins were determined to range from about 650 gallons per minute (gpm) to about 1,650 gpm (Water Plan Update, 2013).

Groundwater resources in the Tulare Lake region are supplied by both alluvial and fractured rock aquifers. Alluvial aquifers are composed of sand and gravel or finer grained sediments, with groundwater stored within the voids, or pore space, between the alluvial sediments. Fractured-rock aquifers consist of

impermeable granitic, metamorphic, volcanic, and hard sedimentary rocks, with groundwater being stored within cracks, fractures, or other void spaces. The distribution and extent of alluvial and fractured-rock aquifers and water wells vary significantly within the region (Water Plan Update, 2013).

The main freshwater-bearing aquifer beneath the site is fractured bedrock. Fractured-rock aquifers are generally found in the mountain and foothill areas adjacent to alluvial groundwater basins. Due to the highly variable nature of the void spaces within fractured-rock aquifers, wells drawing from fractured-rock aquifers tend to have less capacity and less reliability than wells drawing from alluvial aquifers. On average, wells drawing from fractured-rock aquifers yield 10 gpm or less. Although fractured-rock aquifers are less productive compared to alluvial aquifers, they commonly are the critical sole source of water for many communities (Water Plan Update, 2013).

2. Groundwater Quality

The following objectives apply to all groundwaters in the Tulare Lake Basin, except for those areas with specific beneficial use exceptions of selected areas around oil and gas production listed on Table 2-3 of the Tulare Lake Water Quality Control Plan (WQCP, Tulare Lake, 2018).

3.2.1 Bacteria – In ground waters designated MUN, the concentration of total coliform organisms over any 7-day period shall be less than 2.2/100 ml.

3.2.2 Chemical Constituents – Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. The Regional Water Board will consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for detrimental levels of chemical constituents developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U. S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.

At a minimum, waters designated MUN shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.

At a minimum, water designated MUN shall not contain lead in excess of 0.015 mg/l. To ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

3.2.3 Pesticides – No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses.

At a minimum, waters designated MUN shall not contain concentrations of pesticide constituents in excess of the maximum contaminant levels (MCLs) specified in Table 64444-A (Organic Chemicals) of Section 64444 of Title 22 of the California Code of Regulations, which is incorporated by reference into this plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. The Regional Water Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances. More stringent objectives may apply if necessary, to protect other beneficial uses.

3.2.4 Radioactivity – Radionuclides shall not be present in ground waters in concentrations that are deleterious to human, plant, animal, or aquatic life, or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life.

At a minimum, ground waters designated MUN shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 64442 of Section 64442 and Table 64443 of Section 64443 of Title 22, California Code of Regulations, which are incorporated by reference into the plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect.

3.2.5 Salinity – All ground waters shall be maintained as close to natural concentrations of dissolved matter as is reasonable considering careful use and management of water resources, except for those areas with specific beneficial use exceptions as listed in Table 2-3. No proven means exist at present that will allow ongoing human activity in the Basin and maintain ground water salinity at current levels throughout the Basin. Accordingly, the water quality objectives for ground water salinity control the rate of increase. The maximum average annual increase in salinity measured as electrical conductivity shall not exceed the values specified in Table 3-4 for each hydrographic unit, except for those areas with specific beneficial use exceptions as listed in Table 2-3. The average annual increase in electrical conductivity will be determined from monitoring data by calculation of a cumulative average annual increase over a 5-year period.

3.2.6 Tastes and Odors – Groundwaters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

3.2.7 Toxicity – Groundwaters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial use(s). The Regional Water Board will also consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for toxic substances developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the State Water Board Division of Drinking Water Programs, the U.S. Food and Drug Administration, the National Academy of Sciences, the U. S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.

3. Local Groundwater Quality

Groundwater from the three site groundwater wells (Well #1, Well #2, and Well #3) identified on Figure 2 was not sampled and analyzed. The supply wells are located near the northwest portion of the site (Figure 2). The well(s) to be used for the site should be sampled along with analysis for the project. If water quality does not meet the State of California standards as discussed above, steps should be taken during the design of the site such as disinfection, to ensure the water meets California drinking water standards, report of waste discharge requirements, or General Order requirements for project use.

Surrounding groundwater wells in the near vicinity of the site are assumed to serve the public from the same bedrock aquifers or alluvial aquifers further within the valley area of Deer Creek. Groundwater quality was assessed near the site from seven public water wells sampled and analyzed by the California Department of Health Services (DHS). Groundwater data from the seven wells was downloaded from the Geotracker Groundwater Ambient Program (Geotracker GAMA, 2019) website for review. Water quality parameters analyzed from the seven wells were compared to California maximum contaminant levels (MCL) and secondary maximum contaminant levels (SMCL) near the site. The wells are located in an arcuate layout west, north, and east of the site (Figure 6). Tables of detected laboratory analytical results are provided in Appendix A. Table 1 shows a summary of the analytical results that exceeded the MCLs and SMCLs. MCLs and SMCLs were exceeded in four of the seven wells reviewed.

The EPA has established National Primary Drinking Water Regulations (NPDWRs) that set mandatory water quality standards for drinking water contaminants. These are enforceable standards called "maximum contaminant levels" which are established to protect the public against consumption of drinking water contaminants that present a risk to human health. An MCL is the maximum allowable amount of a contaminant in drinking water which is delivered to the consumer. In addition, EPA has established National Secondary Drinking Water Regulations (NSDWRs) that set non-mandatory water quality standards for 15 contaminants. EPA does not enforce these "secondary maximum contaminant levels". They are established as guidelines to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. These contaminants are not considered to present a risk to human health at the SMCL (US EPA, 2019).

Table 1. California Department of Health Services Groundwater Quality Parameters for four of seven Public Water Wells located west, north, and east of the site. Groundwater analyzed from three wells did not exceed MCLs or SMCLs.

DHS WELL 5410038-004

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
9/19/1995	IRON	320	UG/L	--	--	300	UG/L
8/27/2013	IRON	900	UG/L	--	--	300	UG/L
8/25/2016	IRON	1100	UG/L	--	--	300	UG/L
9/21/1998	LEAD	38	UG/L	15	UG/L	--	--
10/23/2007	MANGANESE	53	UG/L	--	--	50	UG/L
8/19/2010	MANGANESE	57	UG/L	--	--	50	UG/L
9/19/1995	MANGANESE	80	UG/L	--	--	50	UG/L
8/27/2013	MANGANESE	140	UG/L	--	--	50	UG/L

8/25/2016	MANGANESE	320	UG/L	--	--	50	UG/L
9/19/1995	NITRATE + NITRITE (AS N)	1000	MG/L	10	MG/L	--	--
9/23/1993	NITRATE + NITRITE (AS N)	1100	MG/L	10	MG/L	--	--
9/21/1998	NITRATE + NITRITE (AS N)	1500	MG/L	10	MG/L	--	--
8/27/2001	NITRATE + NITRITE (AS N)	2000	MG/L	10	MG/L	--	--
8/27/2013	TURBIDITY, LABORATORY	5.5	NTU	--	--	5	UNITS

DHS WELL 5410038-013

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
8/19/2010	COLOR	20	UNITS	--	--	15	units
8/25/2016	COLOR	50	UNITS	--	--	15	units
5/5/1992	COPPER	50	UG/L	1300	UG/L	--	--
12/3/1985	COPPER	100	UG/L	1300	UG/L	--	--
8/19/2010	IRON	490	UG/L	--	--	300	UG/L
8/27/2013	IRON	620	UG/L	--	--	300	UG/L
8/27/2001	IRON	1700	UG/L	--	--	300	UG/L
8/25/2016	IRON	2800	UG/L	--	--	300	UG/L
12/3/1985	LEAD	30	UG/L	15	UG/L	--	--
8/27/2001	NITRATE + NITRITE (AS N)	3100	MG/L	10	MG/L	--	--
7/13/1995	NITRATE + NITRITE (AS N)	3400	MG/L	10	MG/L	--	--
9/23/1993	NITRATE + NITRITE (AS N)	4800	MG/L	10	MG/L	--	--
9/21/1998	NITRATE + NITRITE (AS N)	5100	MG/L	10	MG/L	--	--
8/27/2001	TURBIDITY, LABORATORY	13	NTU	--	--	5	UNITS
8/25/2016	TURBIDITY, LABORATORY	18	NTU	--	--	5	UNITS

DHS WELL 5410038-014

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
8/27/2001	IRON	390	UG/L	--	--	300	UG/L
8/27/2013	IRON	450	UG/L	--	--	300	UG/L
8/25/2016	IRON	1400	UG/L	--	--	300	UG/L
9/21/1998	MANGANESE	79	UG/L	--	--	50	UG/L
8/5/2004	MANGANESE	80	UG/L	--	--	50	UG/L
8/28/2007	MANGANESE	80	UG/L	--	--	50	UG/L
5/5/1992	MANGANESE	100	UG/L	--	--	50	UG/L
8/27/2001	MANGANESE	170	UG/L	--	--	50	UG/L
7/13/1995	MANGANESE	180	UG/L	--	--	50	UG/L
8/19/2010	MANGANESE	270	UG/L	--	--	50	UG/L
8/27/2013	MANGANESE	310	UG/L	--	--	50	UG/L

8/25/2016	MANGANESE	810	UG/L	--	--	50	UG/L
8/27/2001	NITRATE + NITRITE (AS N)	550	MG/L	10	MG/L	--	--
7/13/1995	NITRATE + NITRITE (AS N)	2000	MG/L	10	MG/L	--	--
9/21/1998	NITRATE + NITRITE (AS N)	2500	MG/L	10	MG/L	--	--
8/25/2016	TURBIDITY, LABORATORY	5.5	NTU	--	--	5	UNITS

DHS WELL 5410038-032

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
9/24/2018	IRON	390	UG/L	--	--	300	UG/L

US = Microsiemens

-- = No Data Available

RED exceeds MCL or SMCL

MG/L = Milligrams per Liter

UG/L = Micrograms per Liter

MCL - Maximum Contaminant Level (California)

SMCL - Secondary Maximum Contaminant Level (California)

Analytes exceeded were iron, manganese, lead, nitrate+nitrite (as N), turbidity (laboratory), color, and copper. Lead, nitrate+nitrite (as N), and copper exceeded their respective MCL. Iron, manganese, turbidity (laboratory), and color exceeded their respective SMCL.

The wells with exceeded MCLs and SMCLs are located east and north of the site between Tennessee Ridge and Deer Creek. Well construction and screen depth are unknown for these wells.

4. Groundwater Supply

Groundwater flowing through shallow parts of the aquifer system beneath the site emanates as runoff at higher elevations, specifically from the Sierra Nevada Mountains. The eastern valley margin soils are generally more coarse and permeable especially along the east side of the Tule subbasin adjacent to the Sierra Nevada foothills (USGS, 1995). Deep percolation on the valley floor up-gradient from swampy areas and lakes is a significant source of recharge in wetter areas and during wetter years (Williamson, et.al., 1989).

Based on the Central Valley Hydrologic Model (CVHM), the average groundwater recharge from surface water processes throughout the Central Valley is 7.7-million acre-feet per year. The average annual hydrologic budget from the years 1962-2003 net recharge from landscape (surface water processes) from the CVHM within the combined Kaweah/Tule basin “water balance sub regions” was 710,000 acre-feet (Faunt, 2009).

Recharge rates from precipitation have not changed significantly from predevelopment times. Generally, recharge of the Central Valley Aquifer system occurs during the winter months (December through March) and discharge occurs during the summer months which include the growing season (May through September). Large amounts of water are drawn from storage during the pumping period. The shallow

portion of the aquifer system receives some recharge during irrigation. In typical years, water levels generally recover during the wet season (December through March) (Faunt, 2009).

In much of the valley, the annual rainfall is so low that little precipitation penetrates deeply, and soil-moisture deficiency is perennial. Infiltration from stream channels, canals, and irrigated fields are the principal sources of groundwater recharge (Davis, et.al., 1964). Precipitation falling on the valley floor during the rainy season provides only a small part of the total recharge (Faunt, 2009).

5. Local Depth to Groundwater

Depth to groundwater surrounding the site was not available from the Department of Water Resources (DWR) Groundwater Information Center Interactive Map Application (GICIMA) or the California State Water Board Groundwater Ambient Monitoring and Assessment program (GAMA) (DWR, 2019 and GAMA, 2019).

6. Site Depth to Groundwater

Depth to groundwater was identified from two supply wells; one constructed off-site and on constructed on-site. The well completion reports were downloaded from the California Department of Water Resources Well Completion Report Map Application.

Well Completion Report No.e0359637 indicates the well was constructed in 2017 at 27671 Avenue 120, identified as site Well #3 on Figure 2. Depth to groundwater was encountered at 50 feet below ground surface on December 8, 2017. Lithology reported on the well log for Well #3 included alternating silty sand, sandy clay, silty sand with cobbles, cobbles with fractured metamorphic rock from ground surface to 217 feet, and very hard metamorphic “fractures” encountered from 217 to the maximum depth drilled of 219 feet below ground surface. Based on lithology, the well penetrates an alluvial aquifer along west boundary of the site.

Well Completion Report No.e0282454 indicates the well was constructed in 2015 at 27375 Avenue 120 within alluvium west of the site. Depth to groundwater was encountered at 24 feet below ground surface on August 28, 2015. Lithology reported on the well log included alternating silty sand, sandy gravel, clayey gravel, sandy clay, clayey sand, and gravelly clay from ground surface to 260-feet below ground surface. Weathered fractured rock was encountered from 260 to the maximum depth drilled of 270 feet below ground surface. Based on lithology, the well penetrates an alluvial aquifer west of the site and approximately 550-feet northwest of on-site Well #3.

7. Anticipated Highest Groundwater

Based on the well completion reports reviewed, the anticipated highest groundwater beneath the site is approximately 50-feet below ground surface. Site specific soil data can be used to assess the anticipated depth to groundwater by looking at textural features such as mottling and redox conditions. However, site specific subsurface soils, other than driller’s logs mentioned above, were not available for review. Textural features indicative of shallow groundwater were not reported in the driller’s logs.

8. Groundwater Flow Direction

Groundwater surface can be contoured from three or more elevation data points, typically from wells surrounding a site, using relative elevations based on a temporary benchmark or mean sea level. A minimum of three wells is necessary to calculate the groundwater surface and define the slope of the groundwater surface. Three wells were not available to measure groundwater elevations around the site. Groundwater generally follows topography. Mining activities at the site have altered the natural topography of Tennessee Ridge. Land surface contours on Figure 1 show ground elevation decreasing down to the north, west, and east from the site toward Deer Creek. Although the site topography has been altered, topographic elevation remains to decline down to the north, west, and east from the site toward Deer Creek. Groundwater beneath the site would be expected to flow from the site toward Deer Creek. On a regional scale, groundwater would generally be expected to flow toward the west within the Deer Creek drainage and to a certain extent away from the Deer Creek channel both horizontally and vertically during recharge from seasonal flows.

IV. SUMMARY AND CONCLUSIONS

The California Environmental Quality checklist was evaluated based on the hydrology and water quality conditions reviewed for the site.

Section IX. HYDROLOGY AND WATER QUALITY

Would the project:

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Septic System

It was reported by site mining personnel that the site is not served by an engineered Onsite Wastewater Treatment System (septic system). Mine personnel utilize portable restrooms maintained on-site.

Stormwater

The Federal Clean Water Act, as amended in 1987, is the principal legislation for establishing requirements or the control of stormwater pollutants from urbanization and related activities. The State Porter-Cologne Act (Water Code 13000, et seq.) is the principal legislation for controlling stormwater pollutants in California. In 1972, the Federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges, including discharges associated with construction activities, under the NPDES Program (CSQA Industrial/Commercial, 2003).

In California, the State Water Resources Control Board (SWRCB) through the nine Regional Water Quality Control Boards (RWQCB) administers the NPDES stormwater permitting program. For industrial facilities and construction activities, the SWRCB elected to issue statewide general permits that apply to all stormwater discharges requiring an NPDES permit (CSQA Industrial/Commercial, 2003).

In California mining facilities must prepare a Stormwater Pollution Prevention Plan (SWPPP). Industrial and commercial activities regarding stormwater best management practices (BMPs) for the site are identified in a SWPPP, that had previously been prepared for the site.

BMPs are measures to prevent or mitigate pollution. Potential sources of pollution could include maintenance of machinery, the asphalt plant, and aggregate wash system. Pollutants could include petroleum hydrocarbons such as oil and grease, gasoline constituents, diesel constituents, natural gas, and suspended solids.

SWPPP requirements include the following (General Permit, 2012).

The discharger shall ensure that the Storm Water Pollution Prevention Plans (SWPPPs) for all traditional

project sites are developed and amended or revised by a qualified SWPPP Developer (QSD). The SWPPP shall be designed to address the following two major objectives:

1. To help identify the sources of pollution that affect the quality of industrial stormwater discharges and authorized non-stormwater discharges.
2. To describe and ensure the implementation of BMPs to reduce or prevent pollutants in industrial stormwater discharges and authorized non-stormwater discharges.

The SWPPP must identify a specific individual or individuals within the facility organization as members of the Pollution Prevention Team (PPT). The PPT may have personnel that overlap with related pollution control responsibilities such as a spill prevention and response team. The PPT is responsible for:

- Developing the SWPPP
- Assisting the facility manager in SWPPP implementation and revision
- Conducting the monitoring activities

The SWPPP must include a narrative description of the facility's industrial activities, associated potential pollutant sources, and potential pollutants that could be discharged in stormwater discharges or authorized non-stormwater discharges.

The site SWPPP is provided in Appendix B and includes SWPPP requirements, facility information, Best Management Practices (BMP), BMP implementation, and monitoring implementation plan.

Groundwater Quality

The California Department of Public Health's water system permit application indicates that any well serving drinking water to at least 25 persons for at least 60 days out of the year is a public water system. The site supply wells are used primarily for washing of crushed aggregate. The facility is not expected to employ more than 25 workers for more than 60 days a year, therefore the site would be considered a non-community water system. The proposed project will utilize the existing three supply wells for uses associated with aggregate washing.

Site specific groundwater quality data were not available. Groundwater quality was assessed from nearby wells obtained on the Geotracker GAMA website (Figure 6). Iron exceeded SMCLs in four of the seven wells analyzed from 1995 through 2018. Manganese exceeded SMCLs two of the even wells analyzed from 1992 through 2016. Laboratory turbidity measurements exceeded the SMCL in three of the seven wells analyzed from 2013 through 2016.

Lead exceeded the MCL in two of the seven wells analyzed in 1985 and 1998. Copper exceeded the MCL in one of the seven wells analyzed in 1982 and 1985. The MCL exceedances occurred prior to mining activities at the site that reportedly began in approximately 2003.

Surface water emanating from precipitation and mining operations is contained on-site by graded exterior berms, within the settling basins, and drainage into a collection point within the quarry floor. Storm water runoff is collected and analyzed per requirements of the SWPPP.

All infrastructure designed for the site should follow local, state, and/or federal standards. All potential sources of pollution should be handled to retain pollution and meet regulatory requirements. It is anticipated that the project will require preparation and approval of waste discharge requirements by the Central Valley Regional Water Quality Control Board or will be enrolled under General Waste Discharge requirements for aggregate mining facilities currently being prepared by the Regional Water Quality Control Board. Therefore, violation of water quality standards or waste discharge requirements and substantial degradation of surface and groundwater quality will be less than significant.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The project owner has reported the mining facility utilizes approximately 130,000 gallons of groundwater per day on a 300 day per year basis; totaling approximately 39,000,000 gallons per year. Based on these estimates, total annual groundwater used for the current project flow is estimated to be 120 acre-ft/yr (0.4 acre-ft/day). Mining personnel report that the proposed expansion will not require additional water for operations.

The water is used for aggregate washing at the primary and secondary crushers, dust control, and employee use. The three wells are pumped daily into the on-site 100,000 gallon storage tank. Water is used on demand, as required. Each well provides approximately 30-gpm based on the estimated daily volume of groundwater used.

Harder (2017) reported average annual infiltration along a reach of Deer Creek between a USGS gaging station 8.5-miles southeast of the site at Fountain Springs, and Trenton Weir 15 miles southwest of the site near Pixley. Average annual infiltration was reported as 12,677 acre-ft/yr between water years 1990/91 and 2009/10 along the reach of Deer Creek between Trenton Weir and the Fountain Springs gaging station. The mine site is located adjacent to Deer Creek that recharges the aquifer locally. The volume of localized infiltration along Deer Creek adjacent to the mine site is unknown.

It is assumed the 120 acre-ft/yr of groundwater used for the site comes from the reported 12,677 acre-ft/yr of annual infiltration from Deer Creek. Therefore, it is estimated that 0.9% of the annual Deer Creek infiltration is utilized by the mining facility.

Additionally, a portion of the water used for the mining operations is contained within recycled supply water settling basins on-site. It is unknown what volume of infiltration occurs beneath the settling basins but can be concluded that some portion of the 120 acre-ft/yr pumped from groundwater infiltrates into the local aquifer.

According to the USGS, mining represents approximately 7% of California water use (Johnson and Cody, 2015). The average acre-feet of irrigation water applied to agricultural crops in California is 3.1 acre-feet applied per acre (Johnson and Cody, 2015). The existing mine parcel occupies approximately 118 acres. The expansion area is estimated to be approximately 20 acres. Therefore, a total of 138 acres will be utilized at the mining facility. A similarly sized farm of 138 acres will utilize approximately 428 acre-ft/yr based on the average acre-feet of irrigation water applied to agricultural crops in California of 3.1 acre-feet. The estimated usage of groundwater for the project is approximately 60% less than the average water usage on a similarly sized farm.

Future water storage projects within the Tule Basin are under development. These operations will help to offset future reductions of groundwater supply.

Based on the daily usage and infiltration estimates, recharge from the on-site settling basins, continued use of approximately 120 acre-ft/yr with no increase in usage, and future groundwater banking development within the Tule subbasin along Deer Creek, decrease in groundwater supplies or substantial interference with groundwater recharge by the expansion project such that it may impede sustainable groundwater management of the basin is expected to be less than significant.

c.i) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site?

The mining facility is located south of Deer Creek. The closest boundary of the proposed expansion is approximately 900 feet from the Deer Creek main channel. The current mining area and proposed expansion area will not alter or divert the existing drainage pattern of Deer Creek. Impervious surfaces at the site include exposed portions of nonfractured bedrock that are predominantly steep to near vertical on the mine sidewalls and relatively flat on mine operating surfaces. Existing roadways constructed within the mine facility provide access to mining equipment and are exposed compacted soil, gravel, or bedrock. Where roadways, storage areas, or quarry surfaces are not exposed, the remaining parcel is covered in native vegetation.

Drainage onsite is controlled with berms along the perimeter and graded roadways. Native vegetation in undeveloped portions of the site impede surface water runoff and help to capture erosion of surface soil. The SWPPP prepared for the site reports four flow paths for surface water runoff (Appendix B). The SWPPP site flow map shows runoff to the south flows towards and into the settling basins. Runoff along the east side of the site within the area of the proposed expansion currently flows northerly toward the entrance to the mine gate. No erosional features or sediment buildup was observed on the east flank of Tennessee Ridge or along the shoulder of Deer Creek Drive located between the proposed eastern border of the expansion area and Deer Creek floodplain further east.

The middle portion of the site drains from the top of the quarry ridge down to the north end of the site near the primary and secondary crushers, asphalt plant, and office. Runoff in these areas is controlled by berms along the north border of the site and surface topography of the drive areas where it accumulates at the lowest elevation of the site within the quarry floor operating area. Runoff along the west end of the site near the stockpile location flows to the east toward the crushers and flows to the low point in the quarry floor. Well #1 is located at the northern end of the site at the base end of a driveway that terminates at the base of the quarry fill. Berms are built around the driveway and Well #1 forming a barrier between the site and the floodplain and main channel of Deer Creek further north.

The proposed expansion is expected to contain infrastructure such a graded berms and swales to control runoff as outlined in an Erosion and Drainage Control Plan for the expansion. Erosion or siltation on or offsite is expected to be controlled as a function of normal mining operations.

The site is not crossed by any rivers, streams, canals, or irrigation ditches. Deer Creek is not expected to inundate the site under normal flow conditions throughout the year and the drainage pattern will not be altered due to the project. Erosion and siltation on or offsite is considered a less than significant impact.

c.ii.) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff which would result in flooding on- or off-site?

As stated above in c.i. above, no alteration of the existing drainage pattern of Deer Creek will occur from the proposed expansion. Current surface topography of the expansion area slopes down to the east at approximately 20% (1H:0.2V). Additional impervious surfaces on the proposed expansion area may include exposed quarry walls, quarry floors, and vehicle roadways. Current topography of the expansion area is expected to be altered by mining activities creating relatively flat or gently sloped operating surfaces where mining occurs. Surface runoff in the expansion area is expected to be controlled by grading of roadways and diversion berms that will divert runoff away from the expansion area boundary and toward the main quarry floor.

Because current runoff BMPs and Surface Mining Permit activities are expected to be maintained on the proposed expansion area, similar to the currently mined area, changes to the site drainage pattern in the proposed expansion area are not expected to impact the nearby offsite Deer Creek floodplain or channel and are not expected to increase substantial flooding on or off-site. Therefore, less than significant impact is expected.

c.iii.) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would 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?

It is anticipated that the current SWPPP will be amended to include the proposed expansion area. As such, less than significant impacts are expected to occur.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The proposed expansion is located within a minimal flood hazard area and is located more than 100 miles from the ocean. It is not located along a lake shore that may be potential for threats to tsunami or seiche, therefore, no impact.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The proposed expansion project is located within Tule subbasin that has been designated as a high priority critically overdrafted basin by the Department of Water Resources as described in the Sustainable Groundwater Management Act (SGMA) that went into effect in 2015. Since 2015, the City of Porterville, Porterville Irrigation District, Saucelito Irrigation District, Teapot Dome Water District, Vandalia Water

District, Terra Bella Irrigation District, Kern-Tulare Water District, and Tulare County have been meeting to form the Eastern Tule GSA to cover each District. SGMA requires that local water agencies within all medium and high-priority subbasins form one or more Groundwater Sustainability Agencies (GSA) to write and implement Groundwater Sustainability Plans (GSPs) to accomplish measurable goals and prevent unreasonable physical harm to the basin or the water resource. GSPs must be adopted by January 1, 2020 (East Tule GSA, 2019). The GSP for the East Tule GSA was unavailable for review.

According to the East Tule GSA and Tule Subbasin Web Map application, the current project site and proposed expansion area are located within the boundary of the East Tule GSA under Tulare County responsibility. Since the East Tule GSP is unavailable, specific requirements for the site are not available. It is unknown what significant requirements, if any, will be placed on the expansion project by the East Tule GSP.

The proposed expansion project is not anticipated to increase the volume of water required for the mining facility. Additionally, water quality objectives for the site are anticipated to be met as required by the site SWPPP and Regional Water Board waste discharge requirements. As such, less than significant impact is expected to conflict with or obstruct implementation of the Tulare Lake Basin Water Quality Control Plan and Groundwater Sustainability Plan.

V. LIMITATIONS

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of the responsible party and involved regulatory agencies, unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk and such parties have a duty to determine its adequacy for their intended use, time, and location.

The purpose of this study is to reasonably characterize existing geologic and/or hydrogeologic site conditions. No investigation can be thorough enough to describe all geologic/hydrogeologic conditions of interest at a given site. If conditions have not been identified during the study, such a finding should not therefore be construed as a guarantee of the absence of such conditions at the site, but rather as the result of the services performed within the scope, limitations, and cost of the work performed.

We are unable to report on or accurately predict events that may change the site conditions after the described services are performed, whether occurring naturally or caused by external forces. We assume no responsibility for conditions we were not authorized to evaluate, or conditions not generally recognized as predictable when services were performed. Geologic/hydrogeologic conditions may exist at the site that cannot be identified solely by visual observation. Where subsurface exploratory work is performed, our professional opinions are based in part on interpretation of data from discrete locations that may not represent actual conditions at other locations.

No assessment can eliminate uncertainty. This report was intended to reduce, but not eliminate this uncertainty, recognizing reasonable limits of time and cost. Subsurface variations cannot be known, nor entirely accounted for in spite of exhaustive testing. This report should not be regarded as a guarantee that no further recognized geological/hydrogeological conditions are present on or beneath the site beyond that which could have been detected within the scope of work.

The findings, conclusions, and recommendations rendered in this report are solely professional opinions based on information obtained during the assessment. Changes in existing conditions at the site due to time lapse, natural causes, or operations on adjoining properties may deem the conclusions and recommendations inappropriate. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services.

MGS does not warrant the accuracy of work performed or information supplied by others including any of its subcontractors or any segregated portions of this report. In performing our professional services, we have attempted to apply present engineering and scientific judgment and use a level of effort consistent with the standard of practice measured on the date of work and in the locale of the project site for similar type studies.

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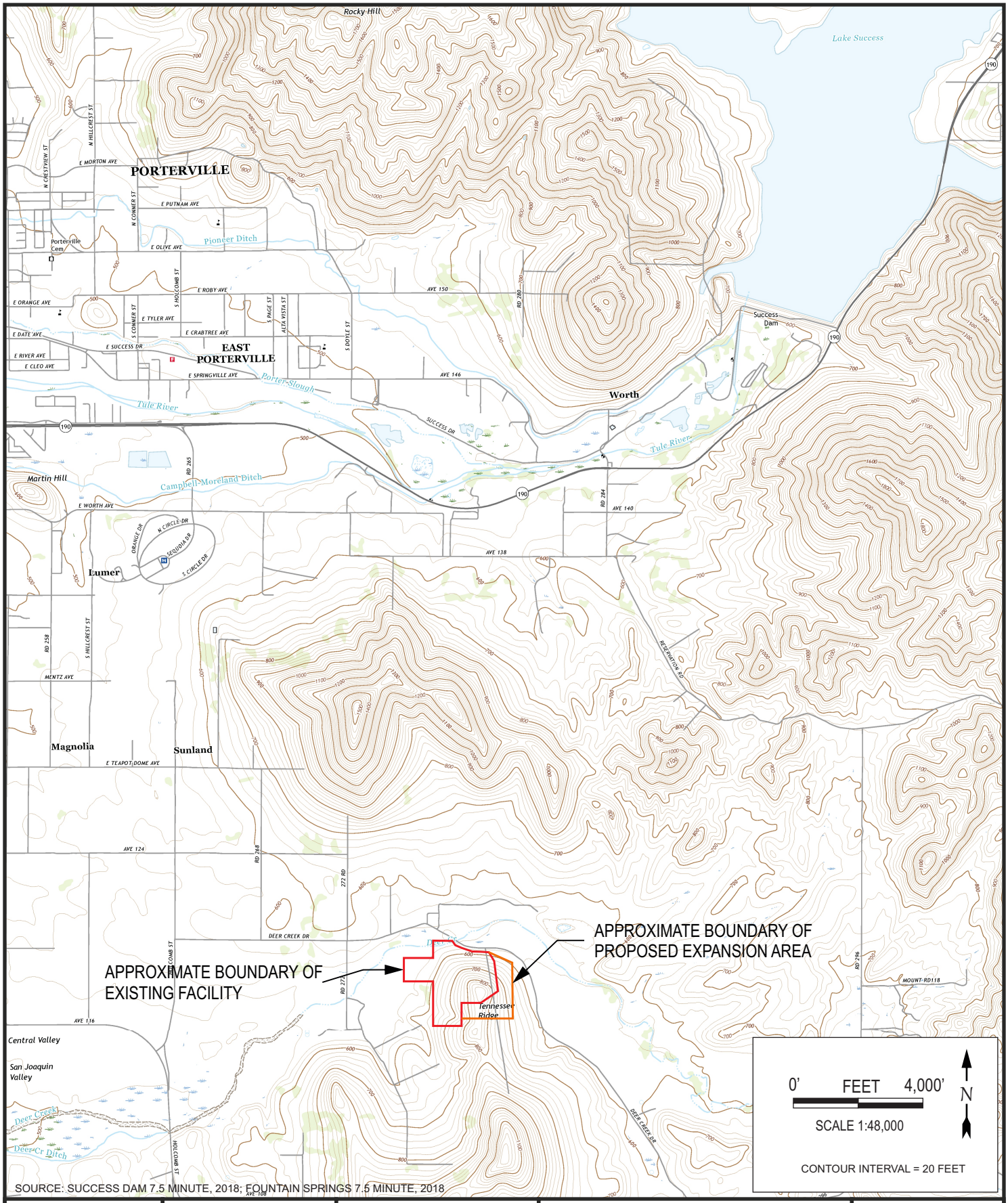
FIGURES



SOURCE: SUCCESS DAM 7.5 MINUTE, 2018; FOUNTAIN SPRINGS 7.5 MINUTE, 2018

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CERTIFIED HYDROGEOLOGIST
FREDERICK A. MASON
No. 996
Exp. 10/19
STATE OF CALIFORNIA
7/16/19

PROJECT:
HYDROLOGY AND WATER QUALITY REPORT

LOCATION MAP

PLOT DATE: 06/21/2019

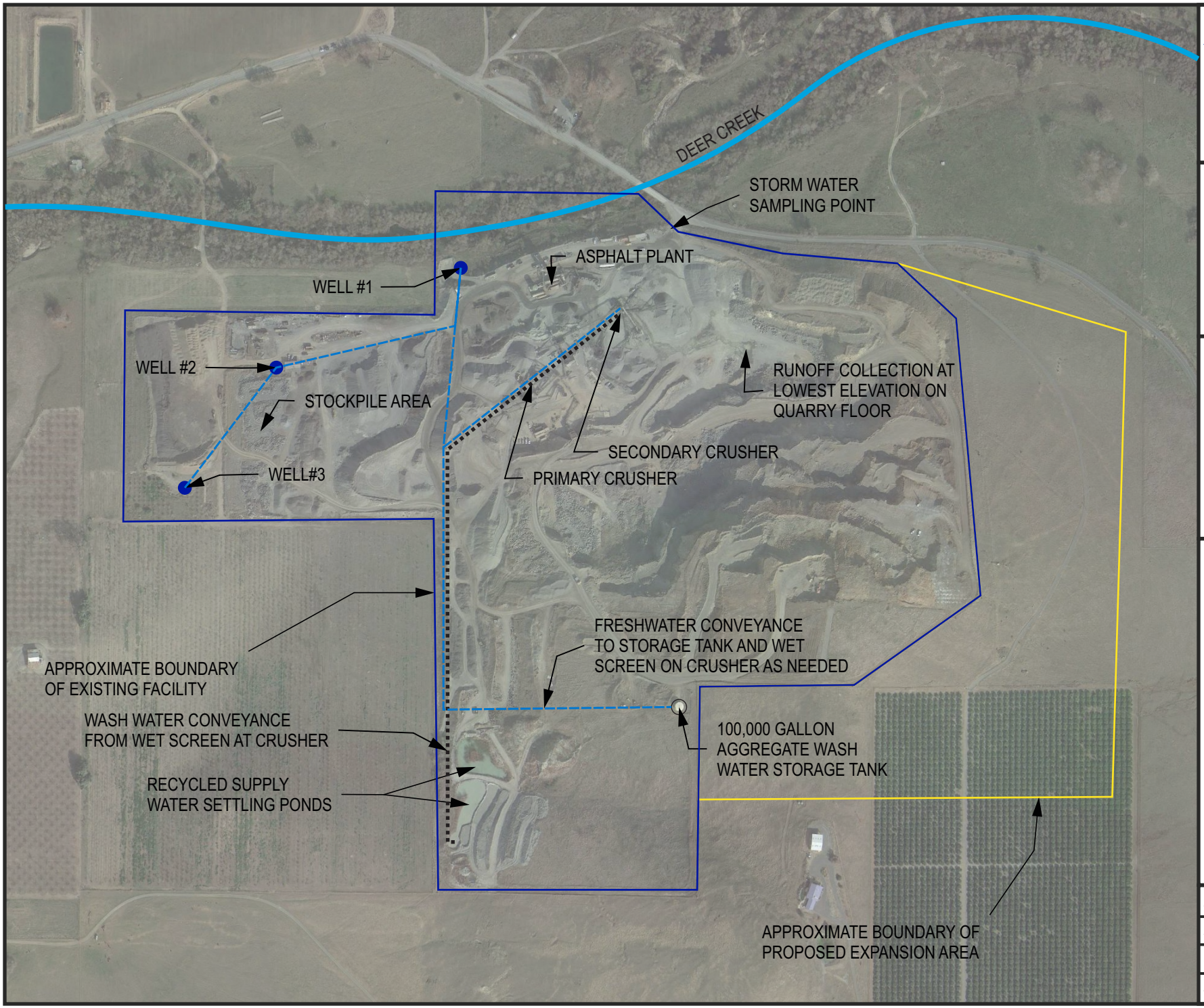
PROJECT NO: 19024

CLIENT:
DEER CREEK ROCK CO. INC.
27671 AVENUE120/ROAD 272
PORTERVILLE, CA 93257

REVISION LOG:

SCALE: AS SHOWN

SHEET NO.: FIGURE 1



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PORTERVILLE, CA 93257

SITE MAP

REVISION LOG:

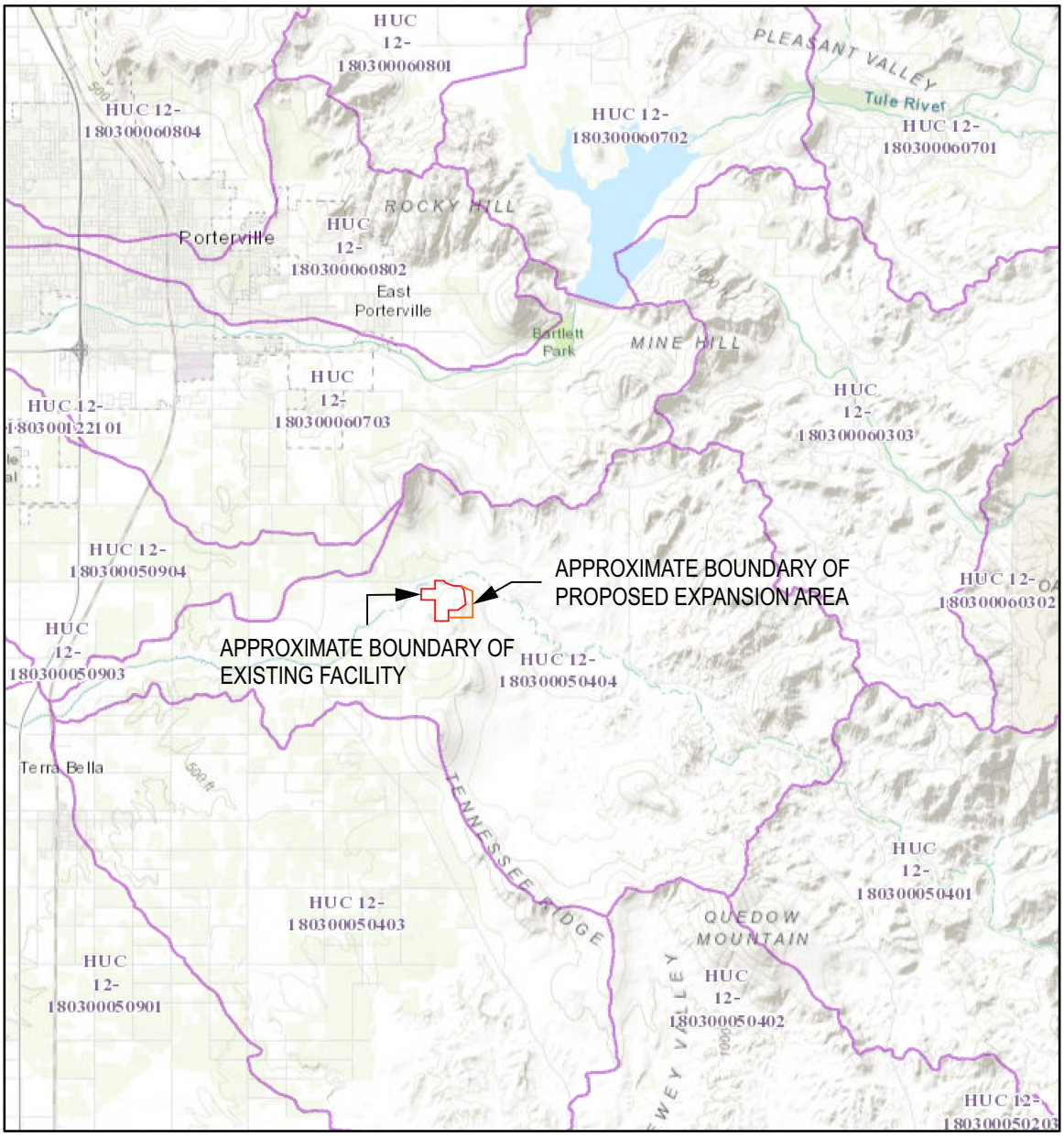
PLOT DATE: 07/03/2019

PROJECT NO: 19024

SCALE: AS SHOWN

SHEET NO.: FIGURE 2

Various Water Management Boundaries in California



7/3/2019, 8:08:55 AM

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

12-digit HU (Subwatershed)

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, USGS TNM – National Water Management Planning Tool

Bureau of Land Management, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS | California Citizens Redistricting Commission (2012). | US Census Bureau | USGS TNM – National Hydrography

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PROJECT: **HYDROLOGY AND WATER QUALITY REPORT**

WATERSHED MAP

PLOT DATE: 07/03/2019

PROJECT NO: 19024

CLIENT:
DEER CREEK ROCK CO. INC.
27671 AVENUE120/ROAD 272
PORTERVILLE, CA 93257

REVISION LOG:

SCALE: AS SHOWN

SHEET NO.: FIGURE 3

National Flood Hazard Layer FIRMette

FEMA

0 250 500 1,000 1,500 2,000 Feet 1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/3/2019 at 11:14:09 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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FEMA FIRM FLOOD INSURANCE MAP - EXISTING AREA

REVISION LOG:

PLOT DATE: 07/03/2019

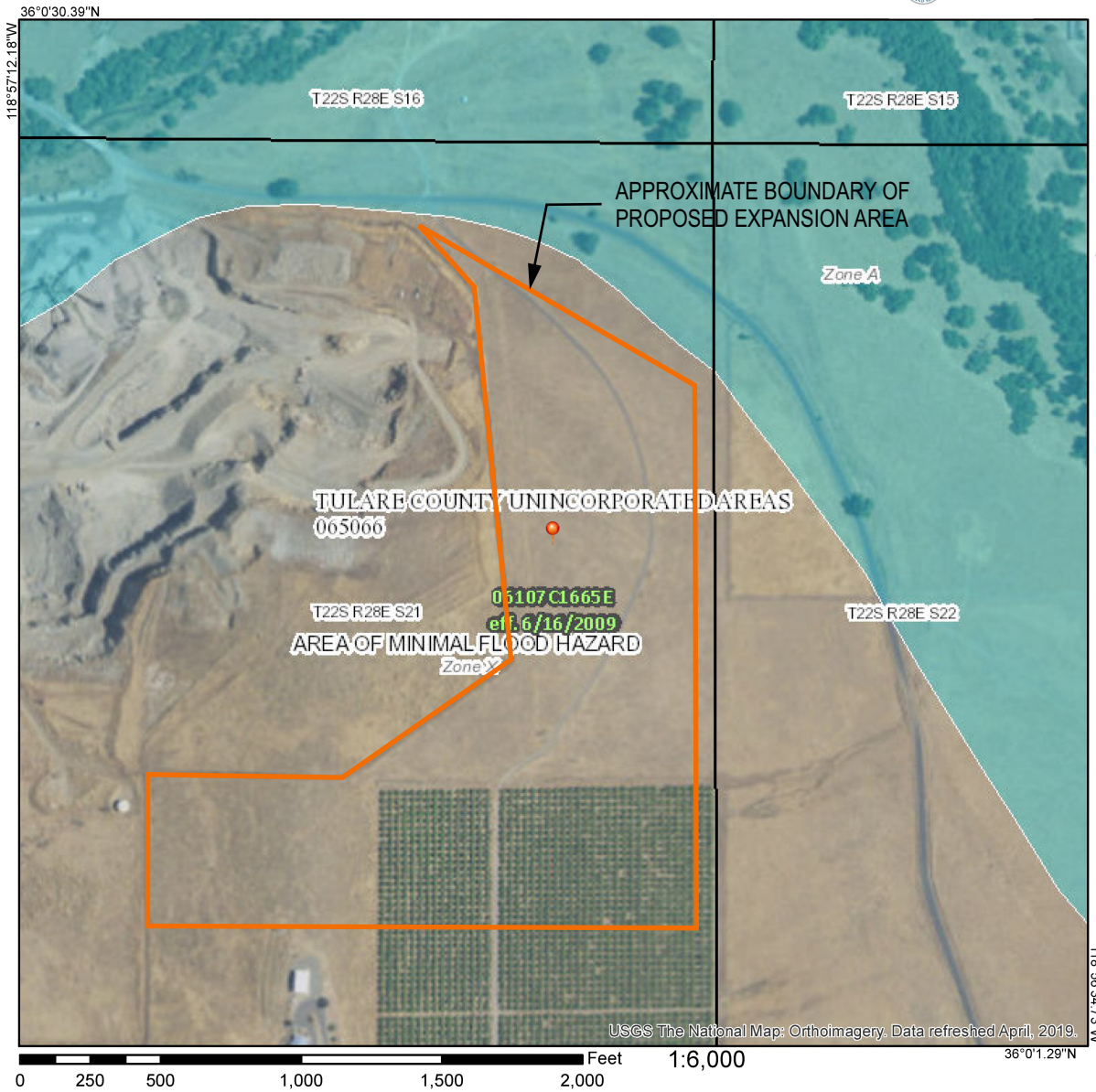
PROJECT NO: 19024

SCALE: AS SHOWN

SHEET NO.: FIGURE 5A

National Flood Hazard Layer FIRMette

FEMA



0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
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OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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PORTERVILLE, CA 93257

FEMA FIRM FLOOD INSURANCE MAP - EXPANSION AREA

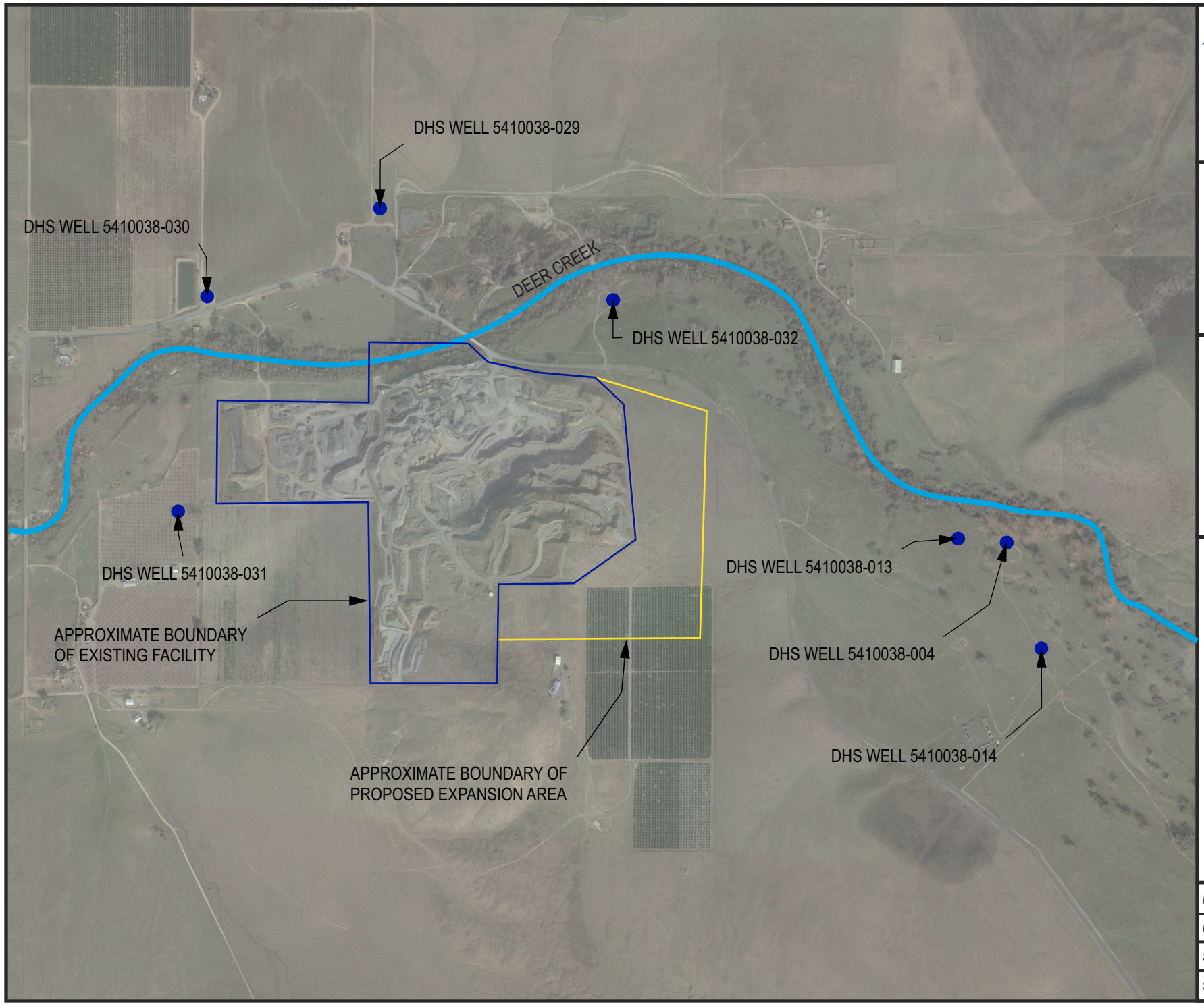
REVISION LOG:

PLOT DATE: 07/03/2019

PROJECT NO: 19024

SCALE: AS SHOWN

SHEET NO.: FIGURE 5B



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PORTERVILLE, CA 93257

WATER QUALITY WELL LOCATION MAP

REVISION LOG:

PLOT DATE: 07/10/2019

PROJECT NO: 19024

SCALE: AS SHOWN

SHEET NO.: FIGURE 6

APPENDIX A

GROUNDWATER QUALITY TABLES – OFF-SITE WELLS

WELL ID 5410038-004
LABORATORY ANALYTICAL RESULTS
Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
10/23/2007	1,2,3-TRICHLOROPROPANE	0.5	UG/L	0.005	UG/L	--	--
5/12/2009	1,2,3-TRICHLOROPROPANE	0.5	UG/L	0.005	UG/L	--	--
5/12/2009	ACETONE	10	UG/L	--	--	--	--
10/23/2007	AGGRSSIVE INDEX (CORROSIVITY)	12	NA	--	--	--	--
8/19/2010	AGGRSSIVE INDEX (CORROSIVITY)	12	NA	--	--	--	--
8/27/2013	AGGRSSIVE INDEX (CORROSIVITY)	12	NA	--	--	--	--
8/25/2016	AGGRSSIVE INDEX (CORROSIVITY)	12	NA	--	--	--	--
9/19/1995	ALKALINITY (TOTAL) AS CACO3	130	MG/L	--	--	--	--
5/5/1992	ALKALINITY (TOTAL) AS CACO3	139	MG/L	--	--	--	--
9/21/1998	ALKALINITY (TOTAL) AS CACO3	140	MG/L	--	--	--	--
10/23/2007	ALKALINITY (TOTAL) AS CACO3	140	MG/L	--	--	--	--
8/19/2010	ALKALINITY (TOTAL) AS CACO3	150	MG/L	--	--	--	--
8/25/2016	ALKALINITY (TOTAL) AS CACO3	150	MG/L	--	--	--	--
8/27/2001	ALKALINITY (TOTAL) AS CACO3	160	MG/L	--	--	--	--
8/5/2004	ALKALINITY (TOTAL) AS CACO3	160	MG/L	--	--	--	--
8/27/2013	ALKALINITY (TOTAL) AS CACO3	160	MG/L	--	--	--	--
5/5/1992	ALUMINUM	20	UG/L	1000	UG/L	200	UG/L
8/27/2013	ALUMINUM	130	UG/L	1000	UG/L	200	UG/L
8/25/2016	ALUMINUM	140	UG/L	1000	UG/L	200	UG/L
8/27/2001	ARSENIC	3.6	UG/L	10	UG/L	--	--
9/21/1998	ARSENIC	4.4	UG/L	10	UG/L	--	--
10/23/2007	ARSENIC	4.7	UG/L	10	UG/L	--	--
8/19/2010	ARSENIC	4.8	UG/L	10	UG/L	--	--
8/5/2004	ARSENIC	5	UG/L	10	UG/L	--	--
8/27/2013	ARSENIC	5.3	UG/L	10	UG/L	--	--
5/5/1992	ARSENIC	6	UG/L	10	UG/L	--	--
9/19/1995	ARSENIC	7	UG/L	10	UG/L	--	--
9/27/1989	ATRAZINE	0.02	UG/L	1	UG/L	--	--
3/13/1990	ATRAZINE	1	UG/L	1	UG/L	--	--
5/5/1992	BARIUM	20	UG/L	1000	UG/L	--	--
3/13/1990	BENTAZON	2	UG/L	18	UG/L	--	--
7/11/1990	BENTAZON	2	UG/L	18	UG/L	--	--
9/19/1995	BICARBONATE ALKALINITY	160	MG/L	--	--	--	--
9/21/1998	BICARBONATE ALKALINITY	160	MG/L	--	--	--	--
5/5/1992	BICARBONATE ALKALINITY	170	MG/L	--	--	--	--
10/23/2007	BICARBONATE ALKALINITY	170	MG/L	--	--	--	--
8/25/2016	BICARBONATE ALKALINITY	180	MG/L	--	--	--	--
8/27/2001	BICARBONATE ALKALINITY	190	MG/L	--	--	--	--
8/19/2010	BICARBONATE ALKALINITY	190	MG/L	--	--	--	--
8/27/2013	BICARBONATE ALKALINITY	190	MG/L	--	--	--	--
8/5/2004	BICARBONATE ALKALINITY	195.12	MG/L	--	--	--	--
5/22/2001	BORON	67	UG/L	--	--	--	--
11/28/2001	BORON	100	UG/L	--	--	--	--
5/5/1992	CADMIUM	1	UG/L	5	UG/L	--	--
9/19/1995	CALCIUM	26	MG/L	--	--	--	--
9/21/1998	CALCIUM	27	MG/L	--	--	--	--
10/23/2007	CALCIUM	27	MG/L	--	--	--	--
5/5/1992	CALCIUM	29	MG/L	--	--	--	--
8/5/2004	CALCIUM	29	MG/L	--	--	--	--
8/19/2010	CALCIUM	30	MG/L	--	--	--	--
8/27/2001	CALCIUM	31	MG/L	--	--	--	--
8/27/2013	CALCIUM	31	MG/L	--	--	--	--
8/25/2016	CALCIUM	31	MG/L	--	--	--	--
5/5/1992	CARBONATE ALKALINITY	1	MG/L	--	--	--	--
8/5/2004	CARBONATE ALKALINITY	1	MG/L	--	--	--	--
10/23/2007	CARBONATE ALKALINITY	1	MG/L	--	--	--	--
10/23/2007	CHLORIDE	11	MG/L	250	MG/L	--	--
5/5/1992	CHLORIDE	13	MG/L	250	MG/L	--	--

WELL ID 5410038-004
LABORATORY ANALYTICAL RESULTS
Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
9/19/1995	CHLORIDE	13	MG/L	250	MG/L	--	--
8/5/2004	CHLORIDE	13	MG/L	250	MG/L	--	--
9/21/1998	CHLORIDE	14	MG/L	250	MG/L	--	--
8/19/2010	CHLORIDE	14	MG/L	250	MG/L	--	--
8/27/2001	CHLORIDE	16	MG/L	250	MG/L	--	--
8/27/2013	CHLORIDE	16	MG/L	250	MG/L	--	--
8/25/2016	CHLORIDE	16	MG/L	250	MG/L	--	--
5/5/1992	CHROMIUM (TOTAL)	5	UG/L	50	UG/L	--	--
11/28/2001	CHROMIUM (TOTAL)	5	UG/L	50	UG/L	--	--
8/5/2004	COLOR	1	UNITS	--	--	15	units
10/23/2007	COLOR	1	UNITS	--	--	15	units
5/5/1992	COLOR	3	UNITS	--	--	15	units
9/19/1995	COLOR	5	UNITS	--	--	15	units
9/21/1998	COLOR	5	UNITS	--	--	15	units
8/19/2010	COLOR	5	UNITS	--	--	15	units
8/25/2016	COLOR	5	UNITS	--	--	15	units
8/27/2013	COLOR	15	UNITS	--	--	15	units
5/5/1992	COPPER	50	UG/L	1300	UG/L	--	--
9/21/1998	COPPER	52	UG/L	1300	UG/L	--	--
9/27/1989	DIBROMOCHLOROPROPANE (DBCP)	0.01	UG/L	0.2	UG/L	--	--
3/13/1990	DIBROMOCHLOROPROPANE (DBCP)	0.01	UG/L	0.2	UG/L	--	--
7/11/1990	DIBROMOCHLOROPROPANE (DBCP)	0.01	UG/L	0.2	UG/L	--	--
9/27/1989	ETHYLENE DIBROMIDE (EDB)	0.02	UG/L	0.05	UG/L	--	--
3/13/1990	ETHYLENE DIBROMIDE (EDB)	0.02	UG/L	0.05	UG/L	--	--
7/11/1990	ETHYLENE DIBROMIDE (EDB)	0.02	UG/L	0.05	UG/L	--	--
8/19/2010	FLUORIDE (F) (NATURAL-SOURCE)	0.26	MG/L	2	MG/L	--	--
8/27/2013	FLUORIDE (F) (NATURAL-SOURCE)	0.29	MG/L	2	MG/L	--	--
5/5/1992	FLUORIDE (F) (NATURAL-SOURCE)	0.3	MG/L	2	MG/L	--	--
9/19/1995	FLUORIDE (F) (NATURAL-SOURCE)	0.3	MG/L	2	MG/L	--	--
8/5/2004	FLUORIDE (F) (NATURAL-SOURCE)	0.3	MG/L	2	MG/L	--	--
8/27/2001	FLUORIDE (F) (NATURAL-SOURCE)	0.32	MG/L	2	MG/L	--	--
8/25/2016	FLUORIDE (F) (NATURAL-SOURCE)	0.34	MG/L	2	MG/L	--	--
10/23/2007	FLUORIDE (F) (NATURAL-SOURCE)	0.36	MG/L	2	MG/L	--	--
9/21/1998	FLUORIDE (F) (NATURAL-SOURCE)	0.41	MG/L	2	MG/L	--	--
8/27/2001	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)	320	MG/L	--	--	--	--
5/5/1992	FOAMING AGENTS (MBAS)	0.05	MG/L	--	--	0.5	MG/L
8/5/2004	FOAMING AGENTS (MBAS)	0.05	MG/L	--	--	0.5	MG/L
10/23/2007	FOAMING AGENTS (MBAS)	0.05	MG/L	--	--	0.5	MG/L
3/13/1990	GROSS ALPHA	0.36	PCI/L	15	PCI/L	--	--
10/15/1990	GROSS ALPHA	0.43	PCI/L	15	PCI/L	--	--
5/7/2001	GROSS ALPHA	0.59	PCI/L	15	PCI/L	--	--
8/22/2005	GROSS ALPHA	0.78	PCI/L	15	PCI/L	--	--
6/20/1997	GROSS ALPHA	0.89	PCI/L	15	PCI/L	--	--
12/19/2005	GROSS ALPHA	0.98	PCI/L	15	PCI/L	--	--
6/24/1993	GROSS ALPHA	1	PCI/L	15	PCI/L	--	--
8/27/2001	GROSS ALPHA	1.06	PCI/L	15	PCI/L	--	--
1/31/2001	GROSS ALPHA	1.19	PCI/L	15	PCI/L	--	--
12/20/2001	GROSS ALPHA	1.25	PCI/L	15	PCI/L	--	--
2/22/2005	GROSS ALPHA	1.39	PCI/L	15	PCI/L	--	--
5/16/2005	GROSS ALPHA	1.39	PCI/L	15	PCI/L	--	--
6/27/1994	GROSS ALPHA	1.9	PCI/L	15	PCI/L	--	--
3/21/1997	GROSS ALPHA	2.46	PCI/L	15	PCI/L	--	--
9/8/1997	GROSS ALPHA	2.57	PCI/L	15	PCI/L	--	--
8/25/1993	GROSS ALPHA	3	PCI/L	15	PCI/L	--	--
8/18/2014	GROSS ALPHA COUNTING ERROR	0.246	PCI/L	--	--	--	--
5/7/2001	GROSS ALPHA COUNTING ERROR	0.55	PCI/L	--	--	--	--
8/27/2001	GROSS ALPHA COUNTING ERROR	0.55	PCI/L	--	--	--	--

WELL ID 5410038-004
LABORATORY ANALYTICAL RESULTS
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SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
12/20/2001	GROSS ALPHA COUNTING ERROR	0.58	PCI/L	--	--	--	--
1/31/2001	GROSS ALPHA COUNTING ERROR	0.59	PCI/L	--	--	--	--
8/22/2005	GROSS ALPHA COUNTING ERROR	0.66	PCI/L	--	--	--	--
3/13/1990	GROSS ALPHA COUNTING ERROR	0.73	PCI/L	--	--	--	--
5/16/2005	GROSS ALPHA COUNTING ERROR	0.73	PCI/L	--	--	--	--
12/19/2005	GROSS ALPHA COUNTING ERROR	0.77	PCI/L	--	--	--	--
2/22/2005	GROSS ALPHA COUNTING ERROR	0.79	PCI/L	--	--	--	--
6/24/1993	GROSS ALPHA COUNTING ERROR	1	PCI/L	--	--	--	--
8/25/1993	GROSS ALPHA COUNTING ERROR	1	PCI/L	--	--	--	--
12/2/1993	GROSS ALPHA COUNTING ERROR	1	PCI/L	--	--	--	--
6/27/1994	GROSS ALPHA COUNTING ERROR	1.4	PCI/L	--	--	--	--
3/21/1997	GROSS ALPHA COUNTING ERROR	1.5	PCI/L	--	--	--	--
9/8/1997	GROSS ALPHA COUNTING ERROR	1.51	PCI/L	--	--	--	--
6/20/1997	GROSS ALPHA COUNTING ERROR	1.95	PCI/L	--	--	--	--
3/30/1998	GROSS ALPHA COUNTING ERROR	1.95	PCI/L	--	--	--	--
7/11/1990	GROSS ALPHA COUNTING ERROR	2.05	PCI/L	--	--	--	--
10/15/1990	GROSS ALPHA COUNTING ERROR	2.56	PCI/L	--	--	--	--
8/18/2014	GROSS ALPHA MDA95	1.16	PCI/L	--	--	--	--
9/19/1995	HARDNESS (TOTAL) AS CACO3	120	MG/L	--	--	--	--
9/21/1998	HARDNESS (TOTAL) AS CACO3	120	MG/L	--	--	--	--
10/23/2007	HARDNESS (TOTAL) AS CACO3	120	MG/L	--	--	--	--
5/5/1992	HARDNESS (TOTAL) AS CACO3	138	MG/L	--	--	--	--
8/27/2001	HARDNESS (TOTAL) AS CACO3	140	MG/L	--	--	--	--
8/5/2004	HARDNESS (TOTAL) AS CACO3	140	MG/L	--	--	--	--
8/19/2010	HARDNESS (TOTAL) AS CACO3	140	MG/L	--	--	--	--
8/27/2013	HARDNESS (TOTAL) AS CACO3	140	MG/L	--	--	--	--
8/25/2016	HARDNESS (TOTAL) AS CACO3	140	MG/L	--	--	--	--
5/5/1992	HYDROXIDE ALKALINITY	1	MG/L	--	--	--	--
8/5/2004	HYDROXIDE ALKALINITY	1	MG/L	--	--	--	--
10/23/2007	HYDROXIDE ALKALINITY	1	MG/L	--	--	--	--
5/5/1992	IRON	70	UG/L	--	--	300	UG/L
8/19/2010	IRON	91	UG/L	--	--	300	UG/L
10/23/2007	IRON	150	UG/L	--	--	300	UG/L
8/27/2001	IRON	240	UG/L	--	--	300	UG/L
9/19/1995	IRON	320	UG/L	--	--	300	UG/L
8/27/2013	IRON	900	UG/L	--	--	300	UG/L
8/25/2016	IRON	1100	UG/L	--	--	300	UG/L
8/25/2016	LANGELIER INDEX @ 60 C	-0.16	--	--	--	--	--
8/19/2010	LANGELIER INDEX @ 60 C	0.12	--	--	--	--	--
8/27/2013	LANGELIER INDEX @ 60 C	0.16	--	--	--	--	--
10/23/2007	LANGELIER INDEX @ 60 C	0.3	--	--	--	--	--
8/5/2004	LANGELIER INDEX @ 60 C	0.31	--	--	--	--	--
8/27/2001	LANGELIER INDEX @ 60 C	0.7	--	--	--	--	--
9/21/1998	LANGELIER INDEX @ 60 C	1.1	--	--	--	--	--
5/5/1992	LEAD	5	UG/L	15	UG/L	--	--
9/21/1998	LEAD	38	UG/L	15	UG/L	--	--
9/19/1995	MAGNESIUM	13	MG/L	--	--	--	--
10/23/2007	MAGNESIUM	13	MG/L	--	--	--	--
9/21/1998	MAGNESIUM	14	MG/L	--	--	--	--
8/25/2016	MAGNESIUM	14	MG/L	--	--	--	--
8/19/2010	MAGNESIUM	15	MG/L	--	--	--	--
8/27/2013	MAGNESIUM	15	MG/L	--	--	--	--
5/5/1992	MAGNESIUM	16	MG/L	--	--	--	--
8/27/2001	MAGNESIUM	16	MG/L	--	--	--	--
8/5/2004	MAGNESIUM	16	MG/L	--	--	--	--
8/5/2004	MANGANESE	20	UG/L	--	--	50	UG/L
5/5/1992	MANGANESE	30	UG/L	--	--	50	UG/L
8/27/2001	MANGANESE	37	UG/L	--	--	50	UG/L

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SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
10/23/2007	MANGANESE	53	UG/L	--	--	50	UG/L
8/19/2010	MANGANESE	57	UG/L	--	--	50	UG/L
9/19/1995	MANGANESE	80	UG/L	--	--	50	UG/L
8/27/2013	MANGANESE	140	UG/L	--	--	50	UG/L
8/25/2016	MANGANESE	320	UG/L	--	--	50	UG/L
5/5/1992	MERCURY	0.2	UG/L	2	UG/L	--	--
5/12/2009	METHYL ETHYL KETONE	10	UG/L	--	--	--	--
5/12/2009	METHYL ISOBUTYL KETONE	10	UG/L	--	--	--	--
8/5/2004	METOLACHLOR	0.5	UG/L	--	--	--	--
8/5/2004	METRIBUZIN	0.5	UG/L	--	--	--	--
5/12/2009	NAPHTHALENE	1	UG/L	--	--	--	--
9/6/2017	NITRATE (AS N)	0.42	MG/L	10	MG/L	--	--
2/5/2016	NITRATE (AS N)	1.1	MG/L	10	MG/L	--	--
8/25/2016	NITRATE (AS N)	2.4	MG/L	10	MG/L	--	--
9/24/2018	NITRATE (AS N)	2.5	MG/L	10	MG/L	--	--
6/27/1994	NITRATE (AS NO3)	2.6	MG/L	45	MG/L	--	--
9/19/1995	NITRATE (AS NO3)	4.5	MG/L	45	MG/L	--	--
9/23/1996	NITRATE (AS NO3)	4.6	MG/L	45	MG/L	--	--
9/8/1997	NITRATE (AS NO3)	5.3	MG/L	45	MG/L	--	--
10/23/2007	NITRATE (AS NO3)	6.4	MG/L	45	MG/L	--	--
5/5/1992	NITRATE (AS NO3)	6.6	MG/L	45	MG/L	--	--
9/21/1998	NITRATE (AS NO3)	6.7	MG/L	45	MG/L	--	--
8/27/2008	NITRATE (AS NO3)	7.7	MG/L	45	MG/L	--	--
8/5/2004	NITRATE (AS NO3)	8	MG/L	45	MG/L	--	--
8/22/2005	NITRATE (AS NO3)	8	MG/L	45	MG/L	--	--
8/27/2001	NITRATE (AS NO3)	8.7	MG/L	45	MG/L	--	--
7/25/2006	NITRATE (AS NO3)	9	MG/L	45	MG/L	--	--
8/26/2002	NITRATE (AS NO3)	10	MG/L	45	MG/L	--	--
8/25/2009	NITRATE (AS NO3)	10	MG/L	45	MG/L	--	--
8/16/2000	NITRATE (AS NO3)	11	MG/L	45	MG/L	--	--
8/16/2011	NITRATE (AS NO3)	11	MG/L	45	MG/L	--	--
8/18/2014	NITRATE (AS NO3)	11	MG/L	45	MG/L	--	--
8/19/2010	NITRATE (AS NO3)	12	MG/L	45	MG/L	--	--
8/27/2013	NITRATE (AS NO3)	13	MG/L	45	MG/L	--	--
11/13/2012	NITRATE (AS NO3)	16	MG/L	45	MG/L	--	--
9/19/1995	NITRATE + NITRITE (AS N)	1000	MG/L	10	MG/L	--	--
9/23/1993	NITRATE + NITRITE (AS N)	1100	MG/L	10	MG/L	--	--
9/21/1998	NITRATE + NITRITE (AS N)	1500	MG/L	10	MG/L	--	--
8/27/2001	NITRATE + NITRITE (AS N)	2000	MG/L	10	MG/L	--	--
5/5/1992	ODOR THRESHOLD @ 60 C	1	TON	--	--	3	UNITS
8/5/2004	ODOR THRESHOLD @ 60 C	1	TON	--	--	3	UNITS
10/23/2007	ODOR THRESHOLD @ 60 C	1	TON	--	--	3	UNITS
9/21/1998	PH, LABORATORY	6.8		--	--	--	--
9/19/1995	PH, LABORATORY	7		--	--	--	--
8/27/2001	PH, LABORATORY	7		--	--	--	--
5/5/1992	PH, LABORATORY	7.3		--	--	--	--
8/25/2016	PH, LABORATORY	7.7		--	--	--	--
8/5/2004	PH, LABORATORY	7.8		--	--	--	--
10/23/2007	PH, LABORATORY	7.9		--	--	--	--
8/19/2010	PH, LABORATORY	8		--	--	--	--
8/27/2013	PH, LABORATORY	8		--	--	--	--
10/23/2007	P-ISOPROPYLTOLUENE	0.5	UG/L	--	--	--	--
5/12/2009	P-ISOPROPYLTOLUENE	0.5	UG/L	--	--	--	--
9/19/1995	POTASSIUM	2	MG/L	--	--	--	--
8/19/2010	POTASSIUM	2.5	MG/L	--	--	--	--
8/25/2016	POTASSIUM	2.5	MG/L	--	--	--	--
10/23/2007	POTASSIUM	2.6	MG/L	--	--	--	--
8/27/2013	POTASSIUM	2.6	MG/L	--	--	--	--

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SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
8/5/2004	POTASSIUM	3	MG/L	--	--	--	--
9/21/1998	POTASSIUM	3.1	MG/L	--	--	--	--
8/27/2001	POTASSIUM	3.6	MG/L	--	--	--	--
5/5/1992	POTASSIUM	31	MG/L	--	--	--	--
12/20/2001	RADIUM 226	0.023	PCI/L	--	--	--	--
12/20/2001	RADIUM 226 COUNTING ERROR	0.038	PCI/L	--	--	--	--
12/20/2001	RADIUM 228	0.204	PCI/L	--	--	--	--
2/22/2005	RADIUM 228	1	PCI/L	--	--	--	--
5/16/2005	RADIUM 228	1	PCI/L	--	--	--	--
12/20/2001	RADIUM 228 COUNTING ERROR	0.28	PCI/L	--	--	--	--
5/5/1992	SELENIUM	5	UG/L	50	UG/L	--	--
5/5/1992	SILVER	5	UG/L	--	--	100	UG/L
9/27/1989	SIMAZINE	0.03	UG/L	4	UG/L	--	--
3/13/1990	SIMAZINE	1	UG/L	4	UG/L	--	--
5/5/1992	SODIUM	2	MG/L	--	--	--	--
9/21/1998	SODIUM	29	MG/L	--	--	--	--
10/23/2007	SODIUM	30	MG/L	--	--	--	--
9/19/1995	SODIUM	32	MG/L	--	--	--	--
8/27/2001	SODIUM	32	MG/L	--	--	--	--
8/5/2004	SODIUM	32	MG/L	--	--	--	--
8/19/2010	SODIUM	32	MG/L	--	--	--	--
8/27/2013	SODIUM	32	MG/L	--	--	--	--
8/25/2016	SODIUM	32	MG/L	--	--	--	--
12/20/2007	SPECIFIC CONDUCTANCE	320	US	--	--	900	US
9/19/1995	SPECIFIC CONDUCTANCE	340	US	--	--	900	US
10/23/2007	SPECIFIC CONDUCTANCE	340	US	--	--	900	US
6/9/2008	SPECIFIC CONDUCTANCE	350	US	--	--	900	US
5/16/2011	SPECIFIC CONDUCTANCE	350	US	--	--	900	US
9/21/1998	SPECIFIC CONDUCTANCE	360	US	--	--	900	US
5/5/1992	SPECIFIC CONDUCTANCE	364	US	--	--	900	US
8/5/2004	SPECIFIC CONDUCTANCE	390	US	--	--	900	US
8/19/2010	SPECIFIC CONDUCTANCE	410	US	--	--	900	US
8/18/2014	SPECIFIC CONDUCTANCE	410	US	--	--	900	US
8/25/2016	SPECIFIC CONDUCTANCE	410	US	--	--	900	US
8/27/2013	SPECIFIC CONDUCTANCE	420	US	--	--	900	US
8/27/2001	SPECIFIC CONDUCTANCE	430	US	--	--	900	US
9/6/2017	SPECIFIC CONDUCTANCE	440	US	--	--	900	US
9/19/1995	SULFATE	22	MG/L	--	--	250	MG/L
10/23/2007	SULFATE	23	MG/L	--	--	250	MG/L
9/21/1998	SULFATE	27	MG/L	--	--	250	MG/L
8/5/2004	SULFATE	28	MG/L	--	--	250	MG/L
5/5/1992	SULFATE	29	MG/L	--	--	250	MG/L
8/27/2001	SULFATE	30	MG/L	--	--	250	MG/L
8/19/2010	SULFATE	30	MG/L	--	--	250	MG/L
8/27/2013	SULFATE	30	MG/L	--	--	250	MG/L
8/25/2016	SULFATE	32	MG/L	--	--	250	MG/L
10/23/2007	TOLUENE	0.52	UG/L	150	UG/L	--	--
9/19/1995	TOTAL DISSOLVED SOLIDS	210	MG/L	--	--	500	MG/L
5/5/1992	TOTAL DISSOLVED SOLIDS	230	MG/L	--	--	500	MG/L
9/21/1998	TOTAL DISSOLVED SOLIDS	230	MG/L	--	--	500	MG/L
10/23/2007	TOTAL DISSOLVED SOLIDS	230	MG/L	--	--	500	MG/L
8/19/2010	TOTAL DISSOLVED SOLIDS	250	MG/L	--	--	500	MG/L
8/5/2004	TOTAL DISSOLVED SOLIDS	260	MG/L	--	--	500	MG/L
8/27/2013	TOTAL DISSOLVED SOLIDS	260	MG/L	--	--	500	MG/L
8/25/2016	TOTAL DISSOLVED SOLIDS	260	MG/L	--	--	500	MG/L
8/27/2001	TOTAL DISSOLVED SOLIDS	270	MG/L	--	--	500	MG/L
8/5/2004	TURBIDITY, LABORATORY	0.1	NTU	--	--	5	UNITS
9/21/1998	TURBIDITY, LABORATORY	0.14	NTU	--	--	5	UNITS

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5/5/1992	TURBIDITY, LABORATORY	0.2	NTU	--	--	5	UNITS
8/19/2010	TURBIDITY, LABORATORY	0.44	NTU	--	--	5	UNITS
10/23/2007	TURBIDITY, LABORATORY	0.83	NTU	--	--	5	UNITS
9/19/1995	TURBIDITY, LABORATORY	1.6	NTU	--	--	5	UNITS
8/27/2001	TURBIDITY, LABORATORY	1.6	NTU	--	--	5	UNITS
8/25/2016	TURBIDITY, LABORATORY	3.9	NTU	--	--	5	UNITS
8/27/2013	TURBIDITY, LABORATORY	5.5	NTU	--	--	5	UNITS
12/20/2001	URANIUM (PCI/L)	1.38	PCI/L	20	PCI/L	--	--
1/31/2001	URANIUM (PCI/L)	1.9	PCI/L	20	PCI/L	--	--
12/20/2001	URANIUM COUNTING ERROR	0.72	PCI/L	--	--	--	--
1/31/2001	URANIUM COUNTING ERROR	0.75	PCI/L	--	--	--	--
5/22/2001	VANADIUM	27	UG/L	--	--	--	--
11/28/2001	VANADIUM	27	UG/L	--	--	--	--
10/23/2007	XYLENES (TOTAL)	0.5	UG/L	1750	UG/L	--	--
5/12/2009	XYLENES (TOTAL)	0.5	UG/L	1750	UG/L	--	--
5/5/1992	ZINC	50	UG/L	--	--	5000	UG/L

US = Microsiemens

-- = No Data Available

RED exceeds MCL or SMCL

MG/L = Milligrams per Liter

UG/L = Micrograms per Liter

MCL - Maximum Contaminant Level (California)

SMCL - Secondary Maximum Contaminant Level (California)

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LABORATORY ANALYTICAL RESULTS
Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
8/27/2008	1,2,3-TRICHLOROPROPANE	0.5	UG/L	0.005	UG/L	--	--
9/30/1992	1,2,4-TRIMETHYLBENZENE	2.6	UG/L	--	--	--	--
8/28/2007	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
8/19/2010	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
8/27/2013	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
8/25/2016	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
8/27/2001	ALKALINITY (TOTAL) AS CACO3	130	MG/L	--	--	--	--
8/25/2016	ALKALINITY (TOTAL) AS CACO3	130	MG/L	--	--	--	--
7/13/1995	ALKALINITY (TOTAL) AS CACO3	140	MG/L	--	--	--	--
8/19/2010	ALKALINITY (TOTAL) AS CACO3	140	MG/L	--	--	--	--
8/27/2013	ALKALINITY (TOTAL) AS CACO3	140	MG/L	--	--	--	--
9/21/1998	ALKALINITY (TOTAL) AS CACO3	150	MG/L	--	--	--	--
8/28/2007	ALKALINITY (TOTAL) AS CACO3	150	MG/L	--	--	--	--
8/5/2004	ALKALINITY (TOTAL) AS CACO3	160	MG/L	--	--	--	--
5/5/1992	ALKALINITY (TOTAL) AS CACO3	162	MG/L	--	--	--	--
5/5/1992	ALUMINUM	20	UG/L	1000	UG/L	200	µg/l
8/25/2016	ALUMINUM	55	UG/L	1000	UG/L	200	µg/l
8/18/2014	ARSENIC	2.1	UG/L	10	UG/L	--	--
8/25/2016	ARSENIC	2.7	UG/L	10	UG/L	--	--
8/27/2013	ARSENIC	3	UG/L	10	UG/L	--	--
8/27/2001	ARSENIC	3.3	UG/L	10	UG/L	--	--
8/19/2010	ARSENIC	3.9	UG/L	10	UG/L	--	--
9/21/1998	ARSENIC	4.2	UG/L	10	UG/L	--	--
5/5/1992	ARSENIC	5	UG/L	10	UG/L	--	--
8/5/2004	ARSENIC	5	UG/L	10	UG/L	--	--
8/28/2007	ARSENIC	5.4	UG/L	10	UG/L	--	--
7/13/1995	ARSENIC	10	UG/L	10	UG/L	--	--
12/3/1985	ARSENIC	30	UG/L	10	UG/L	--	--
9/27/1989	ATRAZINE	0.02	UG/L	1	UG/L	--	--
3/13/1990	ATRAZINE	1	UG/L	1	UG/L	--	--
5/5/1992	BARIUM	20	UG/L	1000	UG/L	--	--
12/3/1985	BARIUM	500	UG/L	1000	UG/L	--	--
3/13/1990	BENTAZON	2	UG/L	18	UG/L	--	--
7/11/1990	BENTAZON	2	UG/L	18	UG/L	--	--
7/13/1995	BICARBONATE ALKALINITY	160	MG/L	--	--	--	--
8/27/2001	BICARBONATE ALKALINITY	160	MG/L	--	--	--	--
8/25/2016	BICARBONATE ALKALINITY	160	MG/L	--	--	--	--
8/19/2010	BICARBONATE ALKALINITY	170	MG/L	--	--	--	--
8/27/2013	BICARBONATE ALKALINITY	170	MG/L	--	--	--	--
8/28/2007	BICARBONATE ALKALINITY	180	MG/L	--	--	--	--
12/3/1985	BICARBONATE ALKALINITY	189	MG/L	--	--	--	--
9/21/1998	BICARBONATE ALKALINITY	190	MG/L	--	--	--	--
8/5/2004	BICARBONATE ALKALINITY	195.12	MG/L	--	--	--	--
5/5/1992	BICARBONATE ALKALINITY	197	MG/L	--	--	--	--
5/22/2001	BORON	74	UG/L	--	--	--	--
11/28/2001	BORON	100	UG/L	--	--	--	--
5/5/1992	CADMIUM	1	UG/L	5	UG/L	--	--
12/3/1985	CADMIUM	5	UG/L	5	UG/L	--	--
8/27/2001	CALCIUM	30	MG/L	--	--	--	--
8/25/2016	CALCIUM	31	MG/L	--	--	--	--
8/19/2010	CALCIUM	32	MG/L	--	--	--	--
8/27/2013	CALCIUM	32	MG/L	--	--	--	--
7/13/1995	CALCIUM	33	MG/L	--	--	--	--
12/3/1985	CALCIUM	34	MG/L	--	--	--	--
8/28/2007	CALCIUM	36	MG/L	--	--	--	--
9/21/1998	CALCIUM	37	MG/L	--	--	--	--
8/5/2004	CALCIUM	37	MG/L	--	--	--	--
5/5/1992	CALCIUM	41	MG/L	--	--	--	--
5/5/1992	CARBONATE ALKALINITY	1	MG/L	--	--	--	--

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8/5/2004	CARBONATE ALKALINITY	1	MG/L	--	--	--	--
8/28/2007	CARBONATE ALKALINITY	1	MG/L	--	--	--	--
12/3/1985	CHLORIDE	26	MG/L	--	--	250	MG/L
7/13/1995	CHLORIDE	28	MG/L	--	--	250	MG/L
9/21/1998	CHLORIDE	29	MG/L	--	--	250	MG/L
8/28/2007	CHLORIDE	33	MG/L	--	--	250	MG/L
8/5/2004	CHLORIDE	34	MG/L	--	--	250	MG/L
8/27/2001	CHLORIDE	37	MG/L	--	--	250	MG/L
5/5/1992	CHLORIDE	40	MG/L	--	--	250	MG/L
8/19/2010	CHLORIDE	45	MG/L	--	--	250	MG/L
8/27/2013	CHLORIDE	45	MG/L	--	--	250	MG/L
8/25/2016	CHLORIDE	47	MG/L	--	--	250	MG/L
9/30/1992	CHLOROMETHANE	1.3	UG/L	--	--	--	--
11/28/2001	CHROMIUM (TOTAL)	3	UG/L	50	UG/L	--	--
5/5/1992	CHROMIUM (TOTAL)	5	UG/L	50	UG/L	--	--
12/3/1985	CHROMIUM (TOTAL)	30	UG/L	50	UG/L	--	--
8/5/2004	COLOR	1	UNITS	--	--	15	units
8/28/2007	COLOR	1	UNITS	--	--	15	units
5/5/1992	COLOR	3	UNITS	--	--	15	units
12/3/1985	COLOR	5	UNITS	--	--	15	units
9/21/1998	COLOR	5	UNITS	--	--	15	units
8/27/2001	COLOR	10	UNITS	--	--	15	units
8/27/2013	COLOR	15	UNITS	--	--	15	units
8/19/2010	COLOR	20	UNITS	--	--	15	units
8/25/2016	COLOR	50	UNITS	--	--	15	units
5/5/1992	COPPER	50	UG/L	1300	UG/L	--	--
12/3/1985	COPPER	100	UG/L	1300	UG/L	--	--
9/27/1989	DIBROMOCHLOROPROPANE (DBCP)	0.01	UG/L	0.2	UG/L	--	--
3/13/1990	DIBROMOCHLOROPROPANE (DBCP)	0.01	UG/L	0.2	UG/L	--	--
7/11/1990	DIBROMOCHLOROPROPANE (DBCP)	0.01	UG/L	0.2	UG/L	--	--
9/30/1992	ETHYLBENZENE	0.7	UG/L	300	UG/L		
9/27/1989	ETHYLENE DIBROMIDE (EDB)	0.02	UG/L	0.05	UG/L	--	--
3/13/1990	ETHYLENE DIBROMIDE (EDB)	0.02	UG/L	0.05	UG/L	--	--
7/11/1990	ETHYLENE DIBROMIDE (EDB)	0.02	UG/L	0.05	UG/L	--	--
7/13/1995	FLUORIDE (F) (NATURAL-SOURCE)	0.2	MG/L	2	MG/L	--	--
8/19/2010	FLUORIDE (F) (NATURAL-SOURCE)	0.25	MG/L	2	MG/L	--	--
8/27/2013	FLUORIDE (F) (NATURAL-SOURCE)	0.25	MG/L	2	MG/L	--	--
12/3/1985	FLUORIDE (F) (NATURAL-SOURCE)	0.3	MG/L	2	MG/L	--	--
5/5/1992	FLUORIDE (F) (NATURAL-SOURCE)	0.3	MG/L	2	MG/L	--	--
8/5/2004	FLUORIDE (F) (NATURAL-SOURCE)	0.3	MG/L	2	MG/L	--	--
8/28/2007	FLUORIDE (F) (NATURAL-SOURCE)	0.31	MG/L	2	MG/L	--	--
8/25/2016	FLUORIDE (F) (NATURAL-SOURCE)	0.31	MG/L	2	MG/L	--	--
8/27/2001	FLUORIDE (F) (NATURAL-SOURCE)	0.32	MG/L	2	MG/L	--	--
9/21/1998	FLUORIDE (F) (NATURAL-SOURCE)	0.35	MG/L	2	MG/L	--	--
8/27/2001	FLUORIDE (TREATMENT RELATED-DISTRIBUTION)	320	MG/L	--	--	--	--
12/3/1985	FOAMING AGENTS (MBAS)	0.05	MG/L	--	--	0.5	MG/L
5/5/1992	FOAMING AGENTS (MBAS)	0.05	MG/L	--	--	0.5	MG/L
8/5/2004	FOAMING AGENTS (MBAS)	0.05	MG/L	--	--	0.5	MG/L
8/28/2007	FOAMING AGENTS (MBAS)	0.05	MG/L	--	--	0.5	MG/L
11/28/2001	GROSS ALPHA	0.74	PCI/L	15	PCI/L	--	--
8/27/2001	GROSS ALPHA	0.8	PCI/L	15	PCI/L	--	--
8/27/2001	GROSS ALPHA	0.8	PCI/L	15	PCI/L	--	--
3/13/1990	GROSS ALPHA	0.98	PCI/L	15	PCI/L	--	--
6/24/1993	GROSS ALPHA	1	PCI/L	15	PCI/L	--	--
5/7/2001	GROSS ALPHA	1.39	PCI/L	15	PCI/L	--	--
8/22/2005	GROSS ALPHA	1.82	PCI/L	15	PCI/L	--	--
4/28/1993	GROSS ALPHA	2	PCI/L	15	PCI/L	--	--
8/25/1993	GROSS ALPHA	2	PCI/L	15	PCI/L	--	--

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LABORATORY ANALYTICAL RESULTS
Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
5/16/2005	GROSS ALPHA	2.12	PCI/L	15	PCI/L	--	--
12/19/2005	GROSS ALPHA	2.12	PCI/L	15	PCI/L	--	--
2/22/2005	GROSS ALPHA	2.75	PCI/L	15	PCI/L	--	--
1/31/2001	GROSS ALPHA	3	PCI/L	15	PCI/L	--	--
3/21/1997	GROSS ALPHA	3.5	PCI/L	15	PCI/L	--	--
6/20/1997	GROSS ALPHA	3.87	PCI/L	15	PCI/L	--	--
9/8/1997	GROSS ALPHA	4.36	PCI/L	15	PCI/L	--	--
8/18/2014	GROSS ALPHA COUNTING ERROR	0.246	PCI/L	--	--	--	--
8/27/2001	GROSS ALPHA COUNTING ERROR	0.46	PCI/L	--	--	--	--
8/27/2001	GROSS ALPHA COUNTING ERROR	0.46	PCI/L	--	--	--	--
11/28/2001	GROSS ALPHA COUNTING ERROR	0.48	PCI/L	--	--	--	--
5/7/2001	GROSS ALPHA COUNTING ERROR	0.66	PCI/L	--	--	--	--
1/31/2001	GROSS ALPHA COUNTING ERROR	0.79	PCI/L	--	--	--	--
8/22/2005	GROSS ALPHA COUNTING ERROR	0.82	PCI/L	--	--	--	--
5/16/2005	GROSS ALPHA COUNTING ERROR	0.95	PCI/L	--	--	--	--
12/19/2005	GROSS ALPHA COUNTING ERROR	0.95	PCI/L	--	--	--	--
4/28/1993	GROSS ALPHA COUNTING ERROR	1	PCI/L	--	--	--	--
6/24/1993	GROSS ALPHA COUNTING ERROR	1	PCI/L	--	--	--	--
12/2/1993	GROSS ALPHA COUNTING ERROR	1	PCI/L	--	--	--	--
2/22/2005	GROSS ALPHA COUNTING ERROR	1.03	PCI/L	--	--	--	--
3/13/1990	GROSS ALPHA COUNTING ERROR	1.57	PCI/L	--	--	--	--
3/21/1997	GROSS ALPHA COUNTING ERROR	1.71	PCI/L	--	--	--	--
6/20/1997	GROSS ALPHA COUNTING ERROR	1.75	PCI/L	--	--	--	--
7/11/1990	GROSS ALPHA COUNTING ERROR	1.82	PCI/L	--	--	--	--
9/8/1997	GROSS ALPHA COUNTING ERROR	1.82	PCI/L	--	--	--	--
8/25/1993	GROSS ALPHA COUNTING ERROR	2	PCI/L	--	--	--	--
10/15/1990	GROSS ALPHA COUNTING ERROR	2.48	PCI/L	--	--	--	--
8/18/2014	GROSS ALPHA MDA95	1.16	PCI/L	--	--	--	--
8/27/2001	HARDNESS (TOTAL) AS CACO3	140	MG/L	--	--	--	--
7/13/1995	HARDNESS (TOTAL) AS CACO3	150	MG/L	--	--	--	--
8/19/2010	HARDNESS (TOTAL) AS CACO3	150	MG/L	--	--	--	--
8/27/2013	HARDNESS (TOTAL) AS CACO3	150	MG/L	--	--	--	--
8/25/2016	HARDNESS (TOTAL) AS CACO3	150	MG/L	--	--	--	--
12/3/1985	HARDNESS (TOTAL) AS CACO3	155	MG/L	--	--	--	--
9/21/1998	HARDNESS (TOTAL) AS CACO3	160	MG/L	--	--	--	--
8/28/2007	HARDNESS (TOTAL) AS CACO3	160	MG/L	--	--	--	--
8/5/2004	HARDNESS (TOTAL) AS CACO3	170	MG/L	--	--	--	--
5/5/1992	HARDNESS (TOTAL) AS CACO3	185	MG/L	--	--	--	--
5/5/1992	HYDROXIDE ALKALINITY	1	MG/L	--	--	--	--
8/5/2004	HYDROXIDE ALKALINITY	1	MG/L	--	--	--	--
8/28/2007	HYDROXIDE ALKALINITY	1	MG/L	--	--	--	--
5/5/1992	IRON	80	UG/L	--	--	300	UG/L
12/3/1985	IRON	100	UG/L	--	--	300	UG/L
7/13/1995	IRON	140	UG/L	--	--	300	UG/L
8/19/2010	IRON	490	UG/L	--	--	300	UG/L
8/27/2013	IRON	620	UG/L	--	--	300	UG/L
8/27/2001	IRON	1700	UG/L	--	--	300	UG/L
8/25/2016	IRON	2800	UG/L	--	--	300	UG/L
8/25/2016	LANGELIER INDEX @ 60 C	0.066		--	--	--	--
8/19/2010	LANGELIER INDEX @ 60 C	0.21		--	--	--	--
8/27/2013	LANGELIER INDEX @ 60 C	0.21		--	--	--	--
9/21/1998	LANGELIER INDEX @ 60 C	0.44		--	--	--	--
8/5/2004	LANGELIER INDEX @ 60 C	0.58		--	--	--	--
8/28/2007	LANGELIER INDEX @ 60 C	0.63		--	--	--	--
8/27/2001	LANGELIER INDEX @ 60 C	0.69		--	--	--	--
5/5/1992	LEAD	5	UG/L	15	UG/L	--	--
12/3/1985	LEAD	30	UG/L	15	UG/L	--	--
10/13/1992	M,P-XYLENE	0.6	UG/L	--	--	--	--
9/30/1992	M,P-XYLENE	3.3	UG/L	--	--	--	--

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LABORATORY ANALYTICAL RESULTS
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SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
12/3/1985	MAGNESIUM	17	MG/L	--	--	--	--
7/13/1995	MAGNESIUM	17	MG/L	--	--	--	--
9/21/1998	MAGNESIUM	17	MG/L	--	--	--	--
8/27/2001	MAGNESIUM	17	MG/L	--	--	--	--
8/28/2007	MAGNESIUM	17	MG/L	--	--	--	--
8/5/2004	MAGNESIUM	18	MG/L	--	--	--	--
8/19/2010	MAGNESIUM	18	MG/L	--	--	--	--
8/27/2013	MAGNESIUM	18	MG/L	--	--	--	--
8/25/2016	MAGNESIUM	18	MG/L	--	--	--	--
5/5/1992	MAGNESIUM	20	MG/L	--	--	--	--
8/27/2013	MANGANESE	27	UG/L	--	--	50	UG/L
8/19/2010	MANGANESE	29	UG/L	--	--	50	UG/L
12/3/1985	MANGANESE	30	UG/L	--	--	50	UG/L
5/5/1992	MANGANESE	30	UG/L	--	--	50	UG/L
7/13/1995	MANGANESE	30	UG/L	--	--	50	UG/L
8/27/2001	MANGANESE	47	UG/L	--	--	50	UG/L
8/25/2016	MANGANESE	51	UG/L	--	--	50	UG/L
5/5/1992	MERCURY	0.2	UG/L	2	UG/L	--	--
12/3/1985	MERCURY	1	UG/L	2	UG/L	--	--
8/5/2004	METOLACHLOR	0.5	UG/L	--	--	--	--
8/5/2004	METRIBUZIN	0.5	UG/L	--	--	--	--
9/30/1992	NAPHTHALENE	0.9	UG/L	--	--	--	--
11/14/2016	NITRATE (AS N)	4.7	MG/L	10	MG/L	--	--
9/6/2017	NITRATE (AS N)	5.5	MG/L	10	MG/L	--	--
6/13/2018	NITRATE (AS N)	5.5	MG/L	10	MG/L	--	--
11/13/2017	NITRATE (AS N)	5.6	MG/L	10	MG/L	--	--
12/13/2018	NITRATE (AS N)	5.8	MG/L	10	MG/L	--	--
9/24/2018	NITRATE (AS N)	5.9	MG/L	10	MG/L	--	--
2/5/2016	NITRATE (AS N)	6	MG/L	10	MG/L	--	--
2/6/2017	NITRATE (AS N)	6.1	MG/L	10	MG/L	--	--
2/26/2019	NITRATE (AS N)	6.1	MG/L	10	MG/L	--	--
8/25/2016	NITRATE (AS N)	6.2	MG/L	10	MG/L	--	--
2/27/2018	NITRATE (AS N)	6.2	MG/L	10	MG/L	--	--
5/9/2016	NITRATE (AS N)	6.4	MG/L	10	MG/L	--	--
9/23/1996	NITRATE (AS NO3)	5.8	MG/L	45	MG/L	--	--
8/16/2000	NITRATE (AS NO3)	13	MG/L	45	MG/L	--	--
8/27/2001	NITRATE (AS NO3)	14	MG/L	45	MG/L	--	--
7/13/1995	NITRATE (AS NO3)	15	MG/L	45	MG/L	--	--
7/25/2006	NITRATE (AS NO3)	16	MG/L	45	MG/L	--	--
12/3/1985	NITRATE (AS NO3)	19	MG/L	45	MG/L	--	--
10/24/2006	NITRATE (AS NO3)	21	MG/L	45	MG/L	--	--
6/27/1994	NITRATE (AS NO3)	21.5	MG/L	45	MG/L	--	--
3/30/1998	NITRATE (AS NO3)	22	MG/L	45	MG/L	--	--
9/21/1998	NITRATE (AS NO3)	22	MG/L	45	MG/L	--	--
8/5/2004	NITRATE (AS NO3)	22	MG/L	45	MG/L	--	--
9/8/1997	NITRATE (AS NO3)	23	MG/L	45	MG/L	--	--
8/27/2008	NITRATE (AS NO3)	24	MG/L	45	MG/L	--	--
8/25/2009	NITRATE (AS NO3)	24	MG/L	45	MG/L	--	--
11/16/2009	NITRATE (AS NO3)	24	MG/L	45	MG/L	--	--
5/25/2010	NITRATE (AS NO3)	24	MG/L	45	MG/L	--	--
8/19/2010	NITRATE (AS NO3)	24	MG/L	45	MG/L	--	--
5/16/2011	NITRATE (AS NO3)	24	MG/L	45	MG/L	--	--
8/16/2011	NITRATE (AS NO3)	24	MG/L	45	MG/L	--	--
5/20/2013	NITRATE (AS NO3)	24	MG/L	45	MG/L	--	--
5/5/1992	NITRATE (AS NO3)	24.3	MG/L	45	MG/L	--	--
8/22/2005	NITRATE (AS NO3)	25	MG/L	45	MG/L	--	--
2/16/2010	NITRATE (AS NO3)	25	MG/L	45	MG/L	--	--
2/11/2013	NITRATE (AS NO3)	25	MG/L	45	MG/L	--	--
5/12/2014	NITRATE (AS NO3)	25	MG/L	45	MG/L	--	--

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SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
8/18/2014	NITRATE (AS NO3)	25	MG/L	45	MG/L	--	--
12/19/2005	NITRATE (AS NO3)	26	MG/L	45	MG/L	--	--
2/28/2006	NITRATE (AS NO3)	26	MG/L	45	MG/L	--	--
5/9/2006	NITRATE (AS NO3)	26	MG/L	45	MG/L	--	--
6/12/2007	NITRATE (AS NO3)	26	MG/L	45	MG/L	--	--
11/16/2010	NITRATE (AS NO3)	26	MG/L	45	MG/L	--	--
3/17/2011	NITRATE (AS NO3)	26	MG/L	45	MG/L	--	--
8/27/2013	NITRATE (AS NO3)	26	MG/L	45	MG/L	--	--
8/28/2007	NITRATE (AS NO3)	27	MG/L	45	MG/L	--	--
2/12/2009	NITRATE (AS NO3)	27	MG/L	45	MG/L	--	--
11/28/2011	NITRATE (AS NO3)	27	MG/L	45	MG/L	--	--
5/21/2012	NITRATE (AS NO3)	27	MG/L	45	MG/L	--	--
11/13/2012	NITRATE (AS NO3)	27	MG/L	45	MG/L	--	--
10/23/2007	NITRATE (AS NO3)	28	MG/L	45	MG/L	--	--
3/18/2008	NITRATE (AS NO3)	28	MG/L	45	MG/L	--	--
6/9/2008	NITRATE (AS NO3)	28	MG/L	45	MG/L	--	--
5/12/2009	NITRATE (AS NO3)	28	MG/L	45	MG/L	--	--
2/28/2012	NITRATE (AS NO3)	28	MG/L	45	MG/L	--	--
2/20/2014	NITRATE (AS NO3)	28	MG/L	45	MG/L	--	--
11/17/2014	NITRATE (AS NO3)	28	MG/L	45	MG/L	--	--
11/25/2013	NITRATE (AS NO3)	29	MG/L	45	MG/L	--	--
2/13/2007	NITRATE (AS NO3)	32	MG/L	45	MG/L	--	--
11/18/2008	NITRATE (AS NO3)	53	MG/L	45	MG/L	--	--
8/27/2001	NITRATE + NITRITE (AS N)	3100	MG/L	10	MG/L	--	--
7/13/1995	NITRATE + NITRITE (AS N)	3400	MG/L	10	MG/L	--	--
9/23/1993	NITRATE + NITRITE (AS N)	4800	MG/L	10	MG/L	--	--
9/21/1998	NITRATE + NITRITE (AS N)	5100	MG/L	10	MG/L	--	--
12/3/1985	ODOR THRESHOLD @ 60 C	1	TON	--	--	3	UNITS
5/5/1992	ODOR THRESHOLD @ 60 C	1	TON	--	--	3	UNITS
9/21/1998	ODOR THRESHOLD @ 60 C	1	TON	--	--	3	UNITS
8/5/2004	ODOR THRESHOLD @ 60 C	1	TON	--	--	3	UNITS
8/28/2007	ODOR THRESHOLD @ 60 C	1	TON	--	--	3	UNITS
9/30/1992	O-XYLENE	1.1	UG/L	--	--	--	--
7/13/1995	PH, LABORATORY	6.8	--	--	--	--	--
8/27/2001	PH, LABORATORY	7.1	--	--	--	--	--
9/21/1998	PH, LABORATORY	7.3	--	--	--	--	--
12/3/1985	PH, LABORATORY	7.6	--	--	--	--	--
5/5/1992	PH, LABORATORY	7.6	--	--	--	--	--
8/5/2004	PH, LABORATORY	8	--	--	--	--	--
8/25/2016	PH, LABORATORY	8	--	--	--	--	--
8/28/2007	PH, LABORATORY	8.1	--	--	--	--	--
8/19/2010	PH, LABORATORY	8.1	--	--	--	--	--
8/27/2013	PH, LABORATORY	8.1	--	--	--	--	--
8/27/2008	P-ISOPROPYLTOLUENE	0.5	UG/L	--	--	--	--
8/19/2010	POTASSIUM	3.9	MG/L	--	--	--	--
7/13/1995	POTASSIUM	4	MG/L	--	--	--	--
8/5/2004	POTASSIUM	4	MG/L	--	--	--	--
8/27/2013	POTASSIUM	4	MG/L	--	--	--	--
8/25/2016	POTASSIUM	4	MG/L	--	--	--	--
8/28/2007	POTASSIUM	4.2	MG/L	--	--	--	--
8/27/2001	POTASSIUM	4.7	MG/L	--	--	--	--
9/21/1998	POTASSIUM	5.4	MG/L	--	--	--	--
12/3/1985	POTASSIUM	6	MG/L	--	--	--	--
5/5/1992	POTASSIUM	39	MG/L	--	--	--	--
2/22/2005	RADIUM 228	1	PCI/L	--	--	--	--
5/16/2005	RADIUM 228	1	PCI/L	--	--	--	--
12/3/1985	SELENIUM	5	UG/L	50	UG/L	--	--
5/5/1992	SELENIUM	5	UG/L	50	UG/L	--	--
5/5/1992	SILVER	5	UG/L	--	--	100	UG/L

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SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
12/3/1985	SILVER	30	UG/L	--	--	100	UG/L
9/27/1989	SIMAZINE	0.03	UG/L	4	UG/L	--	--
3/13/1990	SIMAZINE	1	UG/L	4	UG/L	--	--
5/5/1992	SODIUM	4	MG/L	--	--	--	--
8/27/2001	SODIUM	35	MG/L	--	--	--	--
7/13/1995	SODIUM	37	MG/L	--	--	--	--
9/21/1998	SODIUM	38	MG/L	--	--	--	--
8/28/2007	SODIUM	40	MG/L	--	--	--	--
12/3/1985	SODIUM	41	MG/L	--	--	--	--
8/5/2004	SODIUM	42	MG/L	--	--	--	--
8/19/2010	SODIUM	45	MG/L	--	--	--	--
8/27/2013	SODIUM	46	MG/L	--	--	--	--
8/25/2016	SODIUM	50	MG/L	--	--	--	--
7/13/1995	SPECIFIC CONDUCTANCE	440	US	--	--	900	US
8/27/2001	SPECIFIC CONDUCTANCE	480	US	--	--	900	US
8/28/2007	SPECIFIC CONDUCTANCE	480	US	--	--	900	US
12/20/2007	SPECIFIC CONDUCTANCE	480	US	--	--	900	US
8/5/2004	SPECIFIC CONDUCTANCE	490	US	--	--	900	US
12/3/1985	SPECIFIC CONDUCTANCE	500	US	--	--	900	US
9/21/1998	SPECIFIC CONDUCTANCE	500	US	--	--	900	US
6/9/2008	SPECIFIC CONDUCTANCE	500	US	--	--	900	US
5/5/1992	SPECIFIC CONDUCTANCE	506	US	--	--	900	US
5/16/2011	SPECIFIC CONDUCTANCE	520	US	--	--	900	US
8/27/2013	SPECIFIC CONDUCTANCE	520	US	--	--	900	US
8/18/2014	SPECIFIC CONDUCTANCE	520	US	--	--	900	US
9/6/2017	SPECIFIC CONDUCTANCE	520	US	--	--	900	US
8/19/2010	SPECIFIC CONDUCTANCE	530	US	--	--	900	US
8/25/2016	SPECIFIC CONDUCTANCE	530	US	--	--	900	US
7/13/1995	SULFATE	33	MG/L	--	--	250	MG/L
9/21/1998	SULFATE	35	MG/L	--	--	250	MG/L
8/27/2001	SULFATE	36	MG/L	--	--	250	MG/L
8/28/2007	SULFATE	36	MG/L	--	--	250	MG/L
8/5/2004	SULFATE	37	MG/L	--	--	250	MG/L
8/19/2010	SULFATE	37	MG/L	--	--	250	MG/L
8/27/2013	SULFATE	37	MG/L	--	--	250	MG/L
8/25/2016	SULFATE	37	MG/L	--	--	250	MG/L
12/3/1985	SULFATE	39	MG/L	--	--	250	MG/L
5/5/1992	SULFATE	39	MG/L	--	--	250	MG/L
9/30/1992	TOLUENE	2.2	UG/L	150	UG/L	--	--
7/13/1995	TOTAL DISSOLVED SOLIDS	270	MG/L	--	--	500	MG/L
8/27/2001	TOTAL DISSOLVED SOLIDS	280	MG/L	--	--	500	MG/L
8/28/2007	TOTAL DISSOLVED SOLIDS	300	MG/L	--	--	500	MG/L
8/19/2010	TOTAL DISSOLVED SOLIDS	300	MG/L	--	--	500	MG/L
5/5/1992	TOTAL DISSOLVED SOLIDS	310	MG/L	--	--	500	MG/L
8/27/2013	TOTAL DISSOLVED SOLIDS	310	MG/L	--	--	500	MG/L
8/25/2016	TOTAL DISSOLVED SOLIDS	310	MG/L	--	--	500	MG/L
12/3/1985	TOTAL DISSOLVED SOLIDS	315	MG/L	--	--	500	MG/L
9/21/1998	TOTAL DISSOLVED SOLIDS	320	MG/L	--	--	500	MG/L
8/5/2004	TOTAL DISSOLVED SOLIDS	320	MG/L	--	--	500	MG/L
8/28/2007	TURBIDITY, LABORATORY	0.12	NTU	--	--	5	UNITS
5/5/1992	TURBIDITY, LABORATORY	0.2	NTU	--	--	5	UNITS
8/5/2004	TURBIDITY, LABORATORY	0.2	NTU	--	--	5	UNITS
7/13/1995	TURBIDITY, LABORATORY	0.23	NTU	--	--	5	UNITS
9/21/1998	TURBIDITY, LABORATORY	0.26	NTU	--	--	5	UNITS
12/3/1985	TURBIDITY, LABORATORY	0.5	NTU	--	--	5	UNITS
8/19/2010	TURBIDITY, LABORATORY	2.7	NTU	--	--	5	UNITS
8/27/2013	TURBIDITY, LABORATORY	3.7	NTU	--	--	5	UNITS
8/27/2001	TURBIDITY, LABORATORY	13	NTU	--	--	5	UNITS
8/25/2016	TURBIDITY, LABORATORY	18	NTU	--	--	5	UNITS

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Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
1/31/2001	URANIUM (PCI/L)	4.27	PCI/L	20	PCI/L	--	--
1/31/2001	URANIUM COUNTING ERROR	1.09	PCI/L	--	--	--	--
11/28/2001	VANADIUM	17	UG/L	--	--	--	--
5/22/2001	VANADIUM	20	UG/L	--	--	--	--
8/27/2008	XYLENES (TOTAL)	0.5	UG/L	1750	UG/L	--	--
10/13/1992	XYLENES (TOTAL)	0.6	UG/L	1750	UG/L	--	--
5/5/1992	ZINC	50	UG/L	--	--	5000	UG/L
8/27/2001	ZINC	59	UG/L	--	--	5000	UG/L
12/3/1985	ZINC	100	UG/L	--	--	5000	UG/L

US = Microsiemens

-- = No Data Available

RED exceeds MCL or SMCL

MG/L = Milligrams per Liter

UG/L = Micrograms per Liter

MCL - Maximum Contaminant Level (California)

SMCL - Secondary Maximum Contaminant Level (California)

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LABORATORY ANALYTICAL RESULTS
Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
8/27/2008	1,2,3-TRICHLOROPROPANE	0.5	UG/L	0.005	UG/L	--	--
8/28/2007	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
8/19/2010	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
8/27/2013	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
8/25/2016	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
7/13/1995	ALKALINITY (TOTAL) AS CACO3	130	MG/L	--	--	--	--
8/27/2001	ALKALINITY (TOTAL) AS CACO3	130	MG/L	--	--	--	--
8/25/2016	ALKALINITY (TOTAL) AS CACO3	130	MG/L	--	--	--	--
8/28/2007	ALKALINITY (TOTAL) AS CACO3	140	MG/L	--	--	--	--
8/19/2010	ALKALINITY (TOTAL) AS CACO3	140	MG/L	--	--	--	--
8/27/2013	ALKALINITY (TOTAL) AS CACO3	140	MG/L	--	--	--	--
5/5/1992	ALKALINITY (TOTAL) AS CACO3	145	MG/L	--	--	--	--
8/5/2004	ALKALINITY (TOTAL) AS CACO3	150	MG/L	--	--	--	--
9/21/1998	ALKALINITY (TOTAL) AS CACO3	170	MG/L	--	--	--	--
5/5/1992	ALUMINUM	20	UG/L	1000	UG/L	200	µg/l
8/27/2001	ARSENIC	2.3	UG/L	10	UG/L	--	--
8/27/2013	ARSENIC	2.5	UG/L	10	UG/L	--	--
8/19/2010	ARSENIC	2.9	UG/L	10	UG/L	--	--
9/21/1998	ARSENIC	3.6	UG/L	10	UG/L	--	--
8/5/2004	ARSENIC	4	UG/L	10	UG/L	--	--
8/28/2007	ARSENIC	4.1	UG/L	10	UG/L	--	--
5/5/1992	ARSENIC	5	UG/L	10	UG/L	--	--
7/13/1995	ARSENIC	9	UG/L	10	UG/L	--	--
9/27/1989	ATRAZINE	0.02	UG/L	1	UG/L	--	--
9/29/1989	ATRAZINE	1	UG/L	1	UG/L	--	--
3/13/1990	ATRAZINE	1	UG/L	1	UG/L	--	--
5/5/1992	BARIUM	20	UG/L	1000	UG/L	--	--
3/13/1990	BENTAZON	2	UG/L	18	UG/L	--	--
7/11/1990	BENTAZON	2	UG/L	18	UG/L	--	--
9/21/1998	BICARBONATE ALKALINITY	140	MG/L	--	--	--	--
7/13/1995	BICARBONATE ALKALINITY	160	MG/L	--	--	--	--
8/27/2001	BICARBONATE ALKALINITY	160	MG/L	--	--	--	--
8/25/2016	BICARBONATE ALKALINITY	160	MG/L	--	--	--	--
8/28/2007	BICARBONATE ALKALINITY	170	MG/L	--	--	--	--
8/19/2010	BICARBONATE ALKALINITY	170	MG/L	--	--	--	--
8/27/2013	BICARBONATE ALKALINITY	170	MG/L	--	--	--	--
5/5/1992	BICARBONATE ALKALINITY	177	MG/L	--	--	--	--
8/5/2004	BICARBONATE ALKALINITY	182.925	MG/L	--	--	--	--
5/22/2001	BORON	10	UG/L	--	--	--	--
11/28/2001	BORON	100	UG/L	--	--	--	--
5/5/1992	CADMIUM	1	UG/L	5	UG/L	--	--
8/25/2016	CALCIUM	25	MG/L	--	--	--	--
8/19/2010	CALCIUM	26	MG/L	--	--	--	--
8/27/2013	CALCIUM	26	MG/L	--	--	--	--
8/27/2001	CALCIUM	28	MG/L	--	--	--	--
8/28/2007	CALCIUM	32	MG/L	--	--	--	--
7/13/1995	CALCIUM	33	MG/L	--	--	--	--
9/21/1998	CALCIUM	33	MG/L	--	--	--	--
5/5/1992	CALCIUM	34	MG/L	--	--	--	--
8/5/2004	CALCIUM	35	MG/L	--	--	--	--
5/5/1992	CARBONATE ALKALINITY	1	MG/L	--	--	--	--
8/5/2004	CARBONATE ALKALINITY	1	MG/L	--	--	--	--
8/28/2007	CARBONATE ALKALINITY	1	MG/L	--	--	--	--
8/25/2016	CHLORIDE	10	MG/L	--	--	250	MG/L
8/19/2010	CHLORIDE	11	MG/L	--	--	250	MG/L
8/27/2013	CHLORIDE	11	MG/L	--	--	250	MG/L
8/27/2001	CHLORIDE	14	MG/L	--	--	250	MG/L
5/5/1992	CHLORIDE	15	MG/L	--	--	250	MG/L
7/13/1995	CHLORIDE	15	MG/L	--	--	250	MG/L
9/21/1998	CHLORIDE	18	MG/L	--	--	250	MG/L
8/28/2007	CHLORIDE	18	MG/L	--	--	250	MG/L
8/5/2004	CHLORIDE	19	MG/L	--	--	250	MG/L

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LABORATORY ANALYTICAL RESULTS
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SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
9/30/1992	CHLOROMETHANE	0.9	UG/L	--	--	--	--
11/28/2001	CHROMIUM (TOTAL)	4	UG/L	50	UG/L	--	--
5/5/1992	CHROMIUM (TOTAL)	5	UG/L	50	UG/L	--	--
8/5/2004	COLOR	1	UNITS	--	--	15	units
8/28/2007	COLOR	1	UNITS	--	--	15	units
5/5/1992	COLOR	3	UNITS	--	--	15	units
7/13/1995	COLOR	5	UNITS	--	--	15	units
9/21/1998	COLOR	5	UNITS	--	--	15	units
8/19/2010	COLOR	5	UNITS	--	--	15	units
8/25/2016	COLOR	10	UNITS	--	--	15	units
8/19/2010	COPPER	6.1	UG/L	1300	UG/L	--	--
5/5/1992	COPPER	50	UG/L	1300	UG/L	--	--
9/27/1989	DIBROMOCHLOROPROPANE (DBCP)	0.01	UG/L	0.2	UG/L	--	--
3/13/1990	DIBROMOCHLOROPROPANE (DBCP)	0.01	UG/L	0.2	UG/L	--	--
7/11/1990	DIBROMOCHLOROPROPANE (DBCP)	0.01	UG/L	0.2	UG/L	--	--
9/27/1989	ETHYLENE DIBROMIDE (EDB)	0.02	UG/L	0.05	UG/L	--	--
3/13/1990	ETHYLENE DIBROMIDE (EDB)	0.02	UG/L	0.05	UG/L	--	--
7/11/1990	ETHYLENE DIBROMIDE (EDB)	0.02	UG/L	0.05	UG/L	--	--
8/27/2013	FLUORIDE (F) (NATURAL-SOURCE)	0.23	MG/L	2	MG/L	--	--
8/27/2001	FLUORIDE (F) (NATURAL-SOURCE)	0.27	MG/L	2	MG/L	--	--
8/25/2016	FLUORIDE (F) (NATURAL-SOURCE)	0.27	MG/L	2	MG/L	--	--
8/19/2010	FLUORIDE (F) (NATURAL-SOURCE)	0.28	MG/L	2	MG/L	--	--
5/5/1992	FLUORIDE (F) (NATURAL-SOURCE)	0.3	MG/L	2	MG/L	--	--
7/13/1995	FLUORIDE (F) (NATURAL-SOURCE)	0.3	MG/L	2	MG/L	--	--
8/5/2004	FLUORIDE (F) (NATURAL-SOURCE)	0.3	MG/L	2	MG/L	--	--
8/28/2007	FLUORIDE (F) (NATURAL-SOURCE)	0.31	MG/L	2	MG/L	--	--
9/21/1998	FLUORIDE (F) (NATURAL-SOURCE)	0.37	MG/L	2	MG/L	--	--
5/5/1992	FOAMING AGENTS (MBAS)	0.05	MG/L	--	--	0.5	MG/L
8/5/2004	FOAMING AGENTS (MBAS)	0.05	MG/L	--	--	0.5	MG/L
8/28/2007	FOAMING AGENTS (MBAS)	0.05	MG/L	--	--	0.5	MG/L
6/20/1997	GROSS ALPHA	0.22	PCI/L	15	PCI/L	--	--
3/13/1990	GROSS ALPHA	0.39	PCI/L	15	PCI/L	--	--
11/28/2001	GROSS ALPHA	0.73	PCI/L	15	PCI/L	--	--
3/30/1998	GROSS ALPHA	0.78	PCI/L	15	PCI/L	--	--
5/16/2005	GROSS ALPHA	0.81	PCI/L	15	PCI/L	--	--
6/24/1993	GROSS ALPHA	1	PCI/L	15	PCI/L	--	--
5/7/2001	GROSS ALPHA	1.03	PCI/L	15	PCI/L	--	--
2/22/2005	GROSS ALPHA	1.16	PCI/L	15	PCI/L	--	--
8/27/2001	GROSS ALPHA	1.22	PCI/L	15	PCI/L	--	--
8/22/2005	GROSS ALPHA	1.73	PCI/L	15	PCI/L	--	--
1/31/2001	GROSS ALPHA	1.82	PCI/L	15	PCI/L	--	--
6/27/1994	GROSS ALPHA	1.9	PCI/L	15	PCI/L	--	--
4/28/1993	GROSS ALPHA	2	PCI/L	15	PCI/L	--	--
3/21/1997	GROSS ALPHA	2.16	PCI/L	15	PCI/L	--	--
12/19/2005	GROSS ALPHA	2.27	PCI/L	15	PCI/L	--	--
9/20/1994	GROSS ALPHA	2.4	PCI/L	15	PCI/L	--	--
9/8/1997	GROSS ALPHA	2.72	PCI/L	15	PCI/L	--	--
8/18/2014	GROSS ALPHA	3.31	PCI/L	15	PCI/L	--	--
8/18/2014	GROSS ALPHA COUNTING ERROR	0.291	PCI/L	--	--	--	--
11/28/2001	GROSS ALPHA COUNTING ERROR	0.47	PCI/L	--	--	--	--
8/27/2001	GROSS ALPHA COUNTING ERROR	0.53	PCI/L	--	--	--	--
5/7/2001	GROSS ALPHA COUNTING ERROR	0.61	PCI/L	--	--	--	--
1/31/2001	GROSS ALPHA COUNTING ERROR	0.67	PCI/L	--	--	--	--
5/16/2005	GROSS ALPHA COUNTING ERROR	0.73	PCI/L	--	--	--	--
2/22/2005	GROSS ALPHA COUNTING ERROR	0.79	PCI/L	--	--	--	--
8/22/2005	GROSS ALPHA COUNTING ERROR	0.8	PCI/L	--	--	--	--
12/19/2005	GROSS ALPHA COUNTING ERROR	0.97	PCI/L	--	--	--	--
4/28/1993	GROSS ALPHA COUNTING ERROR	1	PCI/L	--	--	--	--
6/24/1993	GROSS ALPHA COUNTING ERROR	1	PCI/L	--	--	--	--
6/27/1994	GROSS ALPHA COUNTING ERROR	1	PCI/L	--	--	--	--
3/13/1990	GROSS ALPHA COUNTING ERROR	1.13	PCI/L	--	--	--	--
3/21/1997	GROSS ALPHA COUNTING ERROR	1.47	PCI/L	--	--	--	--

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9/20/1994	GROSS ALPHA COUNTING ERROR	1.5	PCI/L	--	--	--	--
9/8/1997	GROSS ALPHA COUNTING ERROR	1.54	PCI/L	--	--	--	--
7/11/1990	GROSS ALPHA COUNTING ERROR	1.62	PCI/L	--	--	--	--
3/30/1998	GROSS ALPHA COUNTING ERROR	1.72	PCI/L	--	--	--	--
6/20/1997	GROSS ALPHA COUNTING ERROR	1.8	PCI/L	--	--	--	--
10/15/1990	GROSS ALPHA COUNTING ERROR	2.31	PCI/L	--	--	--	--
8/18/2014	GROSS ALPHA MDA95	1.16	PCI/L	--	--	--	--
8/25/2016	HARDNESS (TOTAL) AS CACO3	110	MG/L	--	--	--	--
8/27/2001	HARDNESS (TOTAL) AS CACO3	120	MG/L	--	--	--	--
8/19/2010	HARDNESS (TOTAL) AS CACO3	120	MG/L	--	--	--	--
8/27/2013	HARDNESS (TOTAL) AS CACO3	120	MG/L	--	--	--	--
7/13/1995	HARDNESS (TOTAL) AS CACO3	140	MG/L	--	--	--	--
9/21/1998	HARDNESS (TOTAL) AS CACO3	140	MG/L	--	--	--	--
8/28/2007	HARDNESS (TOTAL) AS CACO3	140	MG/L	--	--	--	--
8/5/2004	HARDNESS (TOTAL) AS CACO3	150	MG/L	--	--	--	--
5/5/1992	HARDNESS (TOTAL) AS CACO3	151	MG/L	--	--	--	--
5/5/1992	HYDROXIDE ALKALINITY	1	MG/L	--	--	--	--
8/5/2004	HYDROXIDE ALKALINITY	1	MG/L	--	--	--	--
8/28/2007	HYDROXIDE ALKALINITY	1	MG/L	--	--	--	--
5/5/1992	IRON	50	UG/L	--	--	300	UG/L
7/13/1995	IRON	130	UG/L	--	--	300	UG/L
8/19/2010	IRON	200	UG/L	--	--	300	UG/L
8/27/2001	IRON	390	UG/L	--	--	300	UG/L
8/27/2013	IRON	450	UG/L	--	--	300	UG/L
8/25/2016	IRON	1400	UG/L	--	--	300	UG/L
8/25/2016	LANGELIER INDEX @ 60 C	-0.41		--	--	--	--
8/27/2013	LANGELIER INDEX @ 60 C	0.036		--	--	--	--
8/19/2010	LANGELIER INDEX @ 60 C	0.062		--	--	--	--
8/28/2007	LANGELIER INDEX @ 60 C	0.36		--	--	--	--
8/5/2004	LANGELIER INDEX @ 60 C	0.41		--	--	--	--
9/21/1998	LANGELIER INDEX @ 60 C	0.7		--	--	--	--
8/27/2001	LANGELIER INDEX AT SOURCE TEMP.	0.91		--	--	--	--
5/5/1992	LEAD	5	UG/L	15	UG/L	--	--
8/19/2010	MAGNESIUM	12	MG/L	--	--	--	--
8/27/2013	MAGNESIUM	12	MG/L	--	--	--	--
8/25/2016	MAGNESIUM	12	MG/L	--	--	--	--
8/27/2001	MAGNESIUM	13	MG/L	--	--	--	--
7/13/1995	MAGNESIUM	14	MG/L	--	--	--	--
9/21/1998	MAGNESIUM	14	MG/L	--	--	--	--
8/28/2007	MAGNESIUM	14	MG/L	--	--	--	--
8/5/2004	MAGNESIUM	15	MG/L	--	--	--	--
5/5/1992	MAGNESIUM	16	MG/L	--	--	--	--
9/21/1998	MANGANESE	79	UG/L	--	--	50	UG/L
8/5/2004	MANGANESE	80	UG/L	--	--	50	UG/L
8/28/2007	MANGANESE	80	UG/L	--	--	50	UG/L
5/5/1992	MANGANESE	100	UG/L	--	--	50	UG/L
8/27/2001	MANGANESE	170	UG/L	--	--	50	UG/L
7/13/1995	MANGANESE	180	UG/L	--	--	50	UG/L
8/19/2010	MANGANESE	270	UG/L	--	--	50	UG/L
8/27/2013	MANGANESE	310	UG/L	--	--	50	UG/L
8/25/2016	MANGANESE	810	UG/L	--	--	50	UG/L
5/5/1992	MERCURY	0.2	UG/L	2	UG/L	--	--
8/5/2004	METOLACHLOR	0.5	UG/L	--	--	--	--
8/5/2004	METRIBUZIN	0.5	UG/L	--	--	--	--
7/13/1995	NICKEL	10	UG/L	100	UG/L	--	--
9/23/1996	NITRATE (AS NO3)	1	MG/L	45	MG/L	--	--
8/19/2010	NITRATE (AS NO3)	1.5	MG/L	45	MG/L	--	--
8/26/2003	NITRATE (AS NO3)	2	MG/L	45	MG/L	--	--
7/25/2006	NITRATE (AS NO3)	2	MG/L	45	MG/L	--	--
8/27/2001	NITRATE (AS NO3)	2.4	MG/L	45	MG/L	--	--
11/13/2012	NITRATE (AS NO3)	3.1	MG/L	45	MG/L	--	--
7/13/1995	NITRATE (AS NO3)	8.9	MG/L	45	MG/L	--	--

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6/27/1994	NITRATE (AS NO3)	9	MG/L	45	MG/L	--	--
9/8/1997	NITRATE (AS NO3)	11	MG/L	45	MG/L	--	--
9/21/1998	NITRATE (AS NO3)	11	MG/L	45	MG/L	--	--
5/5/1992	NITRATE (AS NO3)	11.2	MG/L	45	MG/L	--	--
8/5/2004	NITRATE (AS NO3)	12	MG/L	45	MG/L	--	--
8/28/2007	NITRATE (AS NO3)	12	MG/L	45	MG/L	--	--
8/22/2005	NITRATE (AS NO3)	13	MG/L	45	MG/L	--	--
8/27/2001	NITRATE + NITRITE (AS N)	550	MG/L	10	MG/L	--	--
7/13/1995	NITRATE + NITRITE (AS N)	2000	MG/L	10	MG/L	--	--
9/21/1998	NITRATE + NITRITE (AS N)	2500	MG/L	10	MG/L	--	--
5/5/1992	ODOR THRESHOLD @ 60 C	1	TON	--	--	3	UNITS
8/5/2004	ODOR THRESHOLD @ 60 C	1	TON	--	--	3	UNITS
8/28/2007	ODOR THRESHOLD @ 60 C	1	TON	--	--	3	UNITS
8/27/2013	ODOR THRESHOLD @ 60 C	2	TON	--	--	3	UNITS
7/13/1995	PH, LABORATORY	6.8		--	--	--	--
8/27/2001	PH, LABORATORY	6.9		--	--	--	--
9/21/1998	PH, LABORATORY	7		--	--	--	--
5/5/1992	PH, LABORATORY	7.4		--	--	--	--
8/25/2016	PH, LABORATORY	7.6		--	--	--	--
8/5/2004	PH, LABORATORY	7.9		--	--	--	--
8/28/2007	PH, LABORATORY	7.9		--	--	--	--
8/19/2010	PH, LABORATORY	7.9		--	--	--	--
8/27/2013	PH, LABORATORY	8		--	--	--	--
8/27/2008	P-ISOPROPYLTOLUENE	0.5	UG/L	--	--	--	--
8/27/2013	POTASSIUM	2.4	MG/L	--	--	--	--
8/25/2016	POTASSIUM	2.4	MG/L	--	--	--	--
8/19/2010	POTASSIUM	2.5	MG/L	--	--	--	--
7/13/1995	POTASSIUM	3	MG/L	--	--	--	--
8/27/2001	POTASSIUM	3.3	MG/L	--	--	--	--
8/28/2007	POTASSIUM	3.3	MG/L	--	--	--	--
8/5/2004	POTASSIUM	4	MG/L	--	--	--	--
9/21/1998	POTASSIUM	4.2	MG/L	--	--	--	--
5/5/1992	POTASSIUM	29	MG/L	--	--	--	--
2/22/2005	RADIUM 228	1	PCI/L	--	--	--	--
5/16/2005	RADIUM 228	1	PCI/L	--	--	--	--
5/5/1992	SELENIUM	5	UG/L	50	UG/L	--	--
5/5/1992	SILVER	5	UG/L	--	--	100	UG/L
9/27/1989	SIMAZINE	0.03	UG/L	4	UG/L	--	--
9/29/1989	SIMAZINE	1	UG/L	4	UG/L	--	--
3/13/1990	SIMAZINE	1	UG/L	4	UG/L	--	--
5/5/1992	SODIUM	3	MG/L	--	--	--	--
8/27/2001	SODIUM	24	MG/L	--	--	--	--
8/27/2013	SODIUM	24	MG/L	--	--	--	--
8/25/2016	SODIUM	24	MG/L	--	--	--	--
8/19/2010	SODIUM	25	MG/L	--	--	--	--
7/13/1995	SODIUM	30	MG/L	--	--	--	--
9/21/1998	SODIUM	30	MG/L	--	--	--	--
8/28/2007	SODIUM	31	MG/L	--	--	--	--
8/5/2004	SODIUM	32	MG/L	--	--	--	--
8/27/2013	SPECIFIC CONDUCTANCE	320	US	--	--	900	US
8/25/2016	SPECIFIC CONDUCTANCE	320	US	--	--	900	US
9/6/2017	SPECIFIC CONDUCTANCE	320	US	--	--	900	US
8/28/2007	SPECIFIC CONDUCTANCE	340	US	--	--	900	US
8/19/2010	SPECIFIC CONDUCTANCE	340	US	--	--	900	US
5/16/2011	SPECIFIC CONDUCTANCE	340	US	--	--	900	US
8/18/2014	SPECIFIC CONDUCTANCE	340	US	--	--	900	US
7/13/1995	SPECIFIC CONDUCTANCE	370	US	--	--	900	US
8/27/2001	SPECIFIC CONDUCTANCE	370	US	--	--	900	US
12/20/2007	SPECIFIC CONDUCTANCE	370	US	--	--	900	US
5/5/1992	SPECIFIC CONDUCTANCE	392	US	--	--	900	US
6/9/2008	SPECIFIC CONDUCTANCE	400	US	--	--	900	US
9/21/1998	SPECIFIC CONDUCTANCE	410	US	--	--	900	US

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8/5/2004	SPECIFIC CONDUCTANCE	410	US	--	--	900	US
8/25/2016	SULFATE	18	MG/L	--	--	250	MG/L
8/19/2010	SULFATE	22	MG/L	--	--	250	MG/L
8/27/2013	SULFATE	22	MG/L	--	--	250	MG/L
8/28/2007	SULFATE	27	MG/L	--	--	250	MG/L
5/5/1992	SULFATE	28	MG/L	--	--	250	MG/L
9/21/1998	SULFATE	28	MG/L	--	--	250	MG/L
8/5/2004	SULFATE	28	MG/L	--	--	250	MG/L
7/13/1995	SULFATE	29	MG/L	--	--	250	MG/L
8/27/2001	SULFATE	29	MG/L	--	--	250	MG/L
8/25/2016	TOTAL DISSOLVED SOLIDS	200	MG/L	--	--	500	MG/L
8/19/2010	TOTAL DISSOLVED SOLIDS	210	MG/L	--	--	500	MG/L
8/27/2013	TOTAL DISSOLVED SOLIDS	220	MG/L	--	--	500	MG/L
7/13/1995	TOTAL DISSOLVED SOLIDS	230	MG/L	--	--	500	MG/L
8/27/2001	TOTAL DISSOLVED SOLIDS	230	MG/L	--	--	500	MG/L
5/5/1992	TOTAL DISSOLVED SOLIDS	250	MG/L	--	--	500	MG/L
8/28/2007	TOTAL DISSOLVED SOLIDS	250	MG/L	--	--	500	MG/L
9/21/1998	TOTAL DISSOLVED SOLIDS	260	MG/L	--	--	500	MG/L
8/5/2004	TOTAL DISSOLVED SOLIDS	270	MG/L	--	--	500	MG/L
8/28/2007	TURBIDITY, LABORATORY	0.1	NTU	--	--	5	UNITS
7/13/1995	TURBIDITY, LABORATORY	0.17	NTU	--	--	5	UNITS
9/21/1998	TURBIDITY, LABORATORY	0.17	NTU	--	--	5	UNITS
5/5/1992	TURBIDITY, LABORATORY	0.2	NTU	--	--	5	UNITS
8/5/2004	TURBIDITY, LABORATORY	0.3	NTU	--	--	5	UNITS
8/19/2010	TURBIDITY, LABORATORY	0.61	NTU	--	--	5	UNITS
8/27/2001	TURBIDITY, LABORATORY	1.5	NTU	--	--	5	UNITS
8/27/2013	TURBIDITY, LABORATORY	2	NTU	--	--	5	UNITS
8/25/2016	TURBIDITY, LABORATORY	5.5	NTU	--	--	5	UNITS
1/31/2001	URANIUM (PCI/L)	2.04	PCI/L	20	PCI/L	--	--
1/31/2001	URANIUM COUNTING ERROR	0.78	PCI/L	--	--	--	--
5/22/2001	VANADIUM	22	UG/L	--	--	--	--
11/28/2001	VANADIUM	24	UG/L	--	--	--	--
8/27/2008	XYLENES (TOTAL)	0.5	UG/L	1750	UG/L	--	--
5/5/1992	ZINC	50	UG/L	--	--	5000	UG/L

US = Microsiemens

-- = No Data Available

RED exceeds MCL or SMCL

MG/L = Milligrams per Liter

UG/L = Micrograms per Liter

MCL - Maximum Contaminant Level (California)

SMCL - Secondary Maximum Contaminant Level (California)

WELL ID 5410038-029
LABORATORY ANALYTICAL RESULTS
Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
5/19/2015	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
9/24/2018	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
5/19/2015	ALKALINITY (TOTAL) AS CACO3	180	MG/L	--	--	--	--
9/24/2018	ALKALINITY (TOTAL) AS CACO3	190	MG/L	--	--	--	--
5/19/2015	ARSENIC	4.7	UG/L	10	UG/L	--	--
9/24/2018	ARSENIC	5.5	UG/L	10	UG/L	--	--
5/19/2015	BICARBONATE ALKALINITY	220	MG/L	--	--	--	--
9/24/2018	BICARBONATE ALKALINITY	240	MG/L	--	--	--	--
9/24/2018	CALCIUM	35	MG/L	--	--	--	--
5/19/2015	CALCIUM	36	MG/L	--	--	--	--
9/24/2018	CHLORIDE	20	MG/L	--	--	250	MG/L
5/19/2015	CHLORIDE	22	MG/L	--	--	250	MG/L
5/19/2015	FLUORIDE (F) (NATURAL-SOURCE)	0.29	MG/L	2	MG/L	--	--
9/24/2018	FLUORIDE (F) (NATURAL-SOURCE)	0.35	MG/L	2	MG/L	--	--
5/19/2015	GROSS ALPHA COUNTING ERROR	0.156	PCI/L	--	--	--	--
12/13/2018	GROSS ALPHA COUNTING ERROR	0.22	PCI/L	--	--	--	--
10/10/2017	GROSS ALPHA COUNTING ERROR	0.291	PCI/L	--	--	--	--
9/24/2018	GROSS ALPHA COUNTING ERROR	0.291	PCI/L	--	--	--	--
2/26/2019	GROSS ALPHA COUNTING ERROR	0.311	PCI/L	--	--	--	--
10/10/2017	GROSS ALPHA MDA95	1.06	PCI/L	--	--	--	--
9/24/2018	GROSS ALPHA MDA95	1.06	PCI/L	--	--	--	--
5/19/2015	GROSS ALPHA MDA95	1.07	PCI/L	--	--	--	--
12/13/2018	GROSS ALPHA MDA95	1.49	PCI/L	--	--	--	--
2/26/2019	GROSS ALPHA MDA95	1.49	PCI/L	--	--	--	--
5/19/2015	HARDNESS (TOTAL) AS CACO3	180	MG/L	--	--	--	--
9/24/2018	HARDNESS (TOTAL) AS CACO3	180	MG/L	--	--	--	--
9/24/2018	LANGELIER INDEX @ 60 C	-0.018	--	--	--	--	--
5/19/2015	LANGELIER INDEX @ 60 C	0.07	--	--	--	--	--
5/19/2015	MAGNESIUM	23	MG/L	--	--	--	--
9/24/2018	MAGNESIUM	23	MG/L	--	--	--	--
12/13/2018	NITRATE (AS N)	4.2	MG/L	10	MG/L	--	--
10/10/2017	NITRATE (AS N)	4.5	MG/L	10	MG/L	--	--
9/24/2018	NITRATE (AS N)	4.9	MG/L	10	MG/L	--	--
5/19/2015	NITRATE (AS NO3)	25	MG/L	45	MG/L	--	--
9/24/2018	NITRATE + NITRITE (AS N)	4.9	MG/L	10	MG/L	--	--
9/24/2018	PH, LABORATORY	7.6	--	--	--	--	--
5/19/2015	PH, LABORATORY	7.8	--	--	--	--	--
9/24/2018	POTASSIUM	3.1	MG/L	--	--	--	--
5/19/2015	POTASSIUM	3.2	MG/L	--	--	--	--
5/19/2015	RADIUM 226	0.46	PCI/L	--	--	--	--
5/19/2015	RADIUM 226 COUNTING ERROR	0.41	PCI/L	--	--	--	--
5/19/2015	RADIUM 226 MDA95	0.25	PCI/L	--	--	--	--
2/26/2019	RADIUM 228	0.152	PCI/L	--	--	--	--
5/19/2015	RADIUM 228	1.24	PCI/L	--	--	--	--
10/10/2017	RADIUM 228	1.36	PCI/L	--	--	--	--
5/19/2015	RADIUM 228 COUNTING ERROR	0.18	PCI/L	--	--	--	--
9/24/2018	RADIUM 228 COUNTING ERROR	0.354	PCI/L	--	--	--	--
12/13/2018	RADIUM 228 COUNTING ERROR	0.376	PCI/L	--	--	--	--
2/26/2019	RADIUM 228 COUNTING ERROR	0.695	PCI/L	--	--	--	--
10/10/2017	RADIUM 228 COUNTING ERROR	0.85	PCI/L	--	--	--	--
10/10/2017	RADIUM 228 MDA95	0.37	PCI/L	--	--	--	--
2/26/2019	RADIUM 228 MDA95	0.383	PCI/L	--	--	--	--
5/19/2015	RADIUM 228 MDA95	0.55	PCI/L	--	--	--	--
9/24/2018	RADIUM 228 MDA95	0.774	PCI/L	--	--	--	--
12/13/2018	RADIUM 228 MDA95	0.899	PCI/L	--	--	--	--
5/19/2015	SODIUM	47	MG/L	--	--	--	--
9/24/2018	SODIUM	47	MG/L	--	--	--	--
12/13/2018	SPECIFIC CONDUCTANCE	470	US	--	--	900	US

WELL ID 5410038-029

LABORATORY ANALYTICAL RESULTS

Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
10/10/2017	SPECIFIC CONDUCTANCE	480	US	--	--	900	US
5/19/2015	SPECIFIC CONDUCTANCE	490	US	--	--	900	US
9/24/2018	SPECIFIC CONDUCTANCE	530	US	--	--	900	US
9/24/2018	SULFATE	37	MG/L	--	--	250	MG/L
5/19/2015	SULFATE	39	MG/L	--	--	250	MG/L
9/24/2018	TOTAL DISSOLVED SOLIDS	310	MG/L	--	--	500	MG/L
5/19/2015	TOTAL DISSOLVED SOLIDS	320	MG/L	--	--	500	MG/L
5/19/2015	TURBIDITY, LABORATORY	0.1	NTU	--	--	5	UNITS
9/24/2018	TURBIDITY, LABORATORY	0.19	NTU	--	--	5	UNITS
5/19/2015	URANIUM (PCI/L)	1.9	PCI/L	20	PCI/L	--	--

US = Microsiemens

-- = No Data Available

RED exceeds MCL or SMCL

MG/L = Milligrams per Liter

UG/L = Micrograms per Liter

MCL - Maximum Contaminant Level (California)

SMCL - Secondary Maximum Contaminant Level (California)

WELL ID 5410038-030
LABORATORY ANALYTICAL RESULTS
Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
5/19/2015	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
9/24/2018	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
5/19/2015	ALKALINITY (TOTAL) AS CACO3	170	MG/L	--	--	--	--
9/24/2018	ALKALINITY (TOTAL) AS CACO3	180	MG/L	--	--	--	--
9/24/2018	ARSENIC	5	UG/L	10	UG/L	--	--
5/19/2015	BICARBONATE ALKALINITY	200	MG/L	--	--	--	--
9/24/2018	BICARBONATE ALKALINITY	220	MG/L	--	--	--	--
5/19/2015	CALCIUM	34	MG/L	--	--	--	--
9/24/2018	CALCIUM	34	MG/L	--	--	--	--
9/24/2018	CHLORIDE	19	MG/L	--	--	250	MG/L
5/19/2015	CHLORIDE	21	MG/L	--	--	250	MG/L
5/19/2015	CHROMIUM, HEXAVALENT	1.7	UG/L	--	--	--	--
5/19/2015	FLUORIDE (F) (NATURAL-SOURCE)	0.25	MG/L	2	MG/L	--	--
9/24/2018	FLUORIDE (F) (NATURAL-SOURCE)	0.3	MG/L	2	MG/L	--	--
10/10/2017	GROSS ALPHA	3.52	PCI/L	15	PCI/L	--	--
12/13/2018	GROSS ALPHA	3.52	PCI/L	15	PCI/L	--	--
2/26/2019	GROSS ALPHA COUNTING ERROR	0.156	PCI/L	--	--	--	--
9/24/2018	GROSS ALPHA COUNTING ERROR	0.191	PCI/L	--	--	--	--
5/19/2015	GROSS ALPHA COUNTING ERROR	0.269	PCI/L	--	--	--	--
12/13/2018	GROSS ALPHA COUNTING ERROR	0.33	PCI/L	--	--	--	--
10/10/2017	GROSS ALPHA COUNTING ERROR	0.348	PCI/L	--	--	--	--
10/10/2017	GROSS ALPHA MDA95	1.06	PCI/L	--	--	--	--
9/24/2018	GROSS ALPHA MDA95	1.06	PCI/L	--	--	--	--
5/19/2015	GROSS ALPHA MDA95	1.07	PCI/L	--	--	--	--
12/13/2018	GROSS ALPHA MDA95	1.49	PCI/L	--	--	--	--
2/26/2019	GROSS ALPHA MDA95	1.49	PCI/L	--	--	--	--
5/19/2015	HARDNESS (TOTAL) AS CACO3	200	MG/L	--	--	--	--
9/24/2018	HARDNESS (TOTAL) AS CACO3	200	MG/L	--	--	--	--
9/24/2018	IRON	160	UG/L	--	--	300	UG/L
9/24/2018	LANGELIER INDEX @ 60 C	0.15	--	--	--	--	--
5/19/2015	LANGELIER INDEX @ 60 C	0.22	--	--	--	--	--
5/19/2015	MAGNESIUM	27	MG/L	--	--	--	--
9/24/2018	MAGNESIUM	27	MG/L	--	--	--	--
10/10/2017	NITRATE (AS N)	4.4	MG/L	10	MG/L	--	--
9/24/2018	NITRATE (AS N)	6.9	MG/L	10	MG/L	--	--
12/13/2018	NITRATE (AS N)	6.9	MG/L	10	MG/L	--	--
5/19/2015	NITRATE (AS NO3)	39	MG/L	45	MG/L	--	--
9/24/2018	NITRATE + NITRITE (AS N)	6.9	MG/L	10	MG/L	--	--
9/24/2018	PH, LABORATORY	7.9	--	--	--	--	--
5/19/2015	PH, LABORATORY	8	--	--	--	--	--
9/24/2018	POTASSIUM	3.3	MG/L	--	--	--	--
5/19/2015	POTASSIUM	3.6	MG/L	--	--	--	--
5/19/2015	RADIUM 226	0.83	PCI/L	--	--	--	--
5/19/2015	RADIUM 226 COUNTING ERROR	0.58	PCI/L	--	--	--	--
5/19/2015	RADIUM 226 MDA95	0.27	PCI/L	--	--	--	--
5/19/2015	RADIUM 228	0.07	PCI/L	--	--	--	--
10/10/2017	RADIUM 228	0.61	PCI/L	--	--	--	--
5/19/2015	RADIUM 228 COUNTING ERROR	0.03	PCI/L	--	--	--	--
12/13/2018	RADIUM 228 COUNTING ERROR	0.36	PCI/L	--	--	--	--
10/10/2017	RADIUM 228 COUNTING ERROR	0.41	PCI/L	--	--	--	--
9/24/2018	RADIUM 228 COUNTING ERROR	0.415	PCI/L	--	--	--	--
2/26/2019	RADIUM 228 COUNTING ERROR	0.628	PCI/L	--	--	--	--
10/10/2017	RADIUM 228 MDA95	0.19	PCI/L	--	--	--	--
5/19/2015	RADIUM 228 MDA95	0.35	PCI/L	--	--	--	--
2/26/2019	RADIUM 228 MDA95	0.506	PCI/L	--	--	--	--
12/13/2018	RADIUM 228 MDA95	0.876	PCI/L	--	--	--	--
9/24/2018	RADIUM 228 MDA95	0.904	PCI/L	--	--	--	--
5/19/2015	SODIUM	38	MG/L	--	--	--	--

WELL ID 5410038-030

LABORATORY ANALYTICAL RESULTS

Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
9/24/2018	SODIUM	38	MG/L	--	--	--	--
10/10/2017	SPECIFIC CONDUCTANCE	420	US	--	--	900	US
5/19/2015	SPECIFIC CONDUCTANCE	480	US	--	--	900	US
12/13/2018	SPECIFIC CONDUCTANCE	490	US	--	--	900	US
9/24/2018	SPECIFIC CONDUCTANCE	520	US	--	--	900	US
5/19/2015	SULFATE	38	MG/L	--	--	250	MG/L
9/24/2018	SULFATE	39	MG/L	--	--	250	MG/L
9/24/2018	TOTAL DISSOLVED SOLIDS	300	MG/L	--	--	500	MG/L
5/19/2015	TOTAL DISSOLVED SOLIDS	310	MG/L	--	--	500	MG/L
9/24/2018	TURBIDITY, LABORATORY	0.36	NTU	--	--	5	UNITS
5/19/2015	URANIUM (PCI/L)	1.2	PCI/L	20	PCI/L	--	--
5/19/2015	ZINC	52	UG/L	--	--	5000	UG/L

US = Microsiemens

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RED exceeds MCL or SMCL

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MCL - Maximum Contaminant Level (California)

SMCL - Secondary Maximum Contaminant Level (California)

WELL ID 5410038-031
LABORATORY ANALYTICAL RESULTS
Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
9/24/2018	AGGRSSIVE INDEX (CORROSIVITY)	11	--	--	--	--	--
4/1/2015	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
4/1/2015	ALKALINITY (TOTAL) AS CACO3	120	MG/L	--	--	--	--
9/24/2018	ALKALINITY (TOTAL) AS CACO3	120	MG/L	--	--	--	--
4/1/2015	BARIUM	110	UG/L	1000	UG/L	--	--
9/24/2018	BARIUM	150	UG/L	1000	UG/L	--	--
4/1/2015	BICARBONATE ALKALINITY	140	MG/L	--	--	--	--
9/24/2018	BICARBONATE ALKALINITY	150	MG/L	--	--	--	--
4/1/2015	CALCIUM	32	MG/L	--	--	--	--
9/24/2018	CALCIUM	45	MG/L	--	--	--	--
4/1/2015	CHLORIDE	11	MG/L	--	--	250	MG/L
9/24/2018	CHLORIDE	12	MG/L	--	--	250	MG/L
4/1/2015	COLOR	5	UNITS	--	--	15	UNITS
4/1/2015	FLUORIDE (F) (NATURAL-SOURCE)	0.2	MG/L	2	MG/L	--	--
9/24/2018	FLUORIDE (F) (NATURAL-SOURCE)	0.26	MG/L	2	MG/L	--	--
2/26/2019	GROSS ALPHA	3.52	PCI/L	15	PCI/L	--	--
9/24/2018	GROSS ALPHA	4.53	PCI/L	15	PCI/L	--	--
4/1/2015	GROSS ALPHA	4.6	PCI/L	15	PCI/L	--	--
12/27/2018	GROSS ALPHA	6.55	PCI/L	15	PCI/L	--	--
2/26/2019	GROSS ALPHA COUNTING ERROR	0.348	PCI/L	--	--	--	--
4/1/2015	GROSS ALPHA COUNTING ERROR	0.365	PCI/L	--	--	--	--
9/24/2018	GROSS ALPHA COUNTING ERROR	0.365	PCI/L	--	--	--	--
12/27/2018	GROSS ALPHA COUNTING ERROR	0.412	PCI/L	--	--	--	--
9/24/2018	GROSS ALPHA MDA95	1.06	PCI/L	--	--	--	--
12/27/2018	GROSS ALPHA MDA95	1.06	PCI/L	--	--	--	--
4/1/2015	GROSS ALPHA MDA95	1.07	PCI/L	--	--	--	--
2/26/2019	GROSS ALPHA MDA95	1.49	PCI/L	--	--	--	--
4/1/2015	HARDNESS (TOTAL) AS CACO3	110	MG/L	--	--	--	--
9/24/2018	HARDNESS (TOTAL) AS CACO3	160	MG/L	--	--	--	--
9/24/2018	LANGELIER INDEX @ 60 C	-0.7	--	--	--	--	--
4/1/2015	LANGELIER INDEX @ 60 C	-0.24	--	--	--	--	--
4/1/2015	MAGNESIUM	7.6	MG/L	--	--	--	--
9/24/2018	MAGNESIUM	11	MG/L	--	--	--	--
12/28/2017	NITRATE (AS N)	0.8	MG/L	10	MG/L	--	--
9/24/2018	NITRATE (AS N)	4.8	MG/L	10	MG/L	--	--
9/24/2018	NITRATE + NITRITE (AS N)	4.8	MG/L	10	MG/L	--	--
9/24/2018	PH, LABORATORY	7.1	--	--	--	--	--
4/1/2015	PH, LABORATORY	7.7	--	--	--	--	--
4/1/2015	POTASSIUM	2.3	MG/L	--	--	--	--
9/24/2018	POTASSIUM	2.7	MG/L	--	--	--	--
12/27/2018	RADIUM 228 COUNTING ERROR	0.307	PCI/L	--	--	--	--
9/24/2018	RADIUM 228 COUNTING ERROR	0.418	PCI/L	--	--	--	--
2/26/2019	RADIUM 228 COUNTING ERROR	0.535	PCI/L	--	--	--	--
2/26/2019	RADIUM 228 MDA95	0.383	PCI/L	--	--	--	--
12/27/2018	RADIUM 228 MDA95	0.691	PCI/L	--	--	--	--
9/24/2018	RADIUM 228 MDA95	0.859	PCI/L	--	--	--	--
4/1/2015	SODIUM	24	MG/L	--	--	--	--
9/24/2018	SODIUM	31	MG/L	--	--	--	--
4/1/2015	SPECIFIC CONDUCTANCE	320	US	--	--	900	US
9/24/2018	SPECIFIC CONDUCTANCE	440	US	--	--	900	US
4/1/2015	SULFATE	30	MG/L	--	--	250	MG/L
9/24/2018	SULFATE	55	MG/L	--	--	250	MG/L
4/1/2015	TOTAL DISSOLVED SOLIDS	200	MG/L	--	--	500	MG/L
9/24/2018	TOTAL DISSOLVED SOLIDS	270	MG/L	--	--	500	MG/L
9/24/2018	TURBIDITY, LABORATORY	0.18	NTU	--	--	5	UNITS
4/1/2015	TURBIDITY, LABORATORY	0.22	NTU	--	--	5	UNITS
4/1/2015	URANIUM (PCI/L)	2.4	PCI/L	20	PCI/L	--	--
9/24/2018	URANIUM (PCI/L)	3.8	PCI/L	20	PCI/L	--	--

WELL ID 5410038-031

LABORATORY ANALYTICAL RESULTS

Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
12/27/2018	URANIUM (PCI/L)	5.8	PCI/L	20	PCI/L	--	--

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SMCL - Secondary Maximum Contaminant Level (California)

WELL ID 5410038-032
LABORATORY ANALYTICAL RESULTS
Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
9/24/2018	AGGRSSIVE INDEX (CORROSIVITY)	11	--	--	--	--	--
4/1/2015	AGGRSSIVE INDEX (CORROSIVITY)	12	--	--	--	--	--
9/24/2018	ALKALINITY (TOTAL) AS CACO3	110	MG/L	--	--	--	--
4/1/2015	ALKALINITY (TOTAL) AS CACO3	170	MG/L	--	--	--	--
9/24/2018	BICARBONATE ALKALINITY	130	MG/L	--	--	--	--
4/1/2015	BICARBONATE ALKALINITY	210	MG/L	--	--	--	--
9/24/2018	CALCIUM	22	MG/L	--	--	--	--
4/1/2015	CALCIUM	36	MG/L	--	--	--	--
9/24/2018	CHLORIDE	7.5	MG/L	--	--	250	MG/L
4/1/2015	CHLORIDE	23	MG/L	--	--	250	MG/L
4/1/2015	COLOR	5	UNITS	--	--	15	UNITS
9/24/2018	COLOR	15	UNITS	--	--	15	UNITS
9/24/2018	FLUORIDE (F) (NATURAL-SOURCE)	0.25	MG/L	2	MG/L	--	--
4/1/2015	FLUORIDE (F) (NATURAL-SOURCE)	0.29	MG/L	2	MG/L	--	--
9/24/2018	GROSS ALPHA	4.03	PCI/L	15	PCI/L	--	--
12/27/2018	GROSS ALPHA COUNTING ERROR	0.269	PCI/L	--	--	--	--
4/1/2015	GROSS ALPHA COUNTING ERROR	0.291	PCI/L	--	--	--	--
2/26/2019	GROSS ALPHA COUNTING ERROR	0.291	PCI/L	--	--	--	--
9/24/2018	GROSS ALPHA COUNTING ERROR	0.348	PCI/L	--	--	--	--
9/24/2018	GROSS ALPHA MDA95	1.06	PCI/L	--	--	--	--
12/27/2018	GROSS ALPHA MDA95	1.06	PCI/L	--	--	--	--
4/1/2015	GROSS ALPHA MDA95	1.07	PCI/L	--	--	--	--
2/26/2019	GROSS ALPHA MDA95	1.49	PCI/L	--	--	--	--
9/24/2018	HARDNESS (TOTAL) AS CACO3	78	MG/L	--	--	--	--
4/1/2015	HARDNESS (TOTAL) AS CACO3	170	MG/L	--	--	--	--
9/24/2018	IRON	390	UG/L	--	--	300	UG/L
9/24/2018	LANGELIER INDEX @ 60 C	-0.92	--	--	--	--	--
4/1/2015	LANGELIER INDEX @ 60 C	0.35	--	--	--	--	--
9/24/2018	MAGNESIUM	5.7	MG/L	--	--	--	--
4/1/2015	MAGNESIUM	19	MG/L	--	--	--	--
9/24/2018	MANGANESE	33	UG/L	--	--	50	UG/L
12/28/2017	NITRATE (AS N)	0.8	MG/L	10	MG/L	--	--
4/1/2015	NITRATE (AS NO3)	22	MG/L	45	MG/L	--	--
9/24/2018	PH, LABORATORY	7.2	--	--	--	--	--
4/1/2015	PH, LABORATORY	8.1	--	--	--	--	--
9/24/2018	POTASSIUM	2.2	MG/L	--	--	--	--
4/1/2015	POTASSIUM	4	MG/L	--	--	--	--
2/26/2019	RADIUM 228	0.037	PCI/L	--	--	--	--
9/24/2018	RADIUM 228 COUNTING ERROR	0.308	PCI/L	--	--	--	--
12/27/2018	RADIUM 228 COUNTING ERROR	0.329	PCI/L	--	--	--	--
2/26/2019	RADIUM 228 COUNTING ERROR	0.66	PCI/L	--	--	--	--
2/26/2019	RADIUM 228 MDA95	0.506	PCI/L	--	--	--	--
9/24/2018	RADIUM 228 MDA95	0.653	PCI/L	--	--	--	--
12/27/2018	RADIUM 228 MDA95	0.674	PCI/L	--	--	--	--
9/24/2018	SODIUM	22	MG/L	--	--	--	--
4/1/2015	SODIUM	43	MG/L	--	--	--	--
9/24/2018	SPECIFIC CONDUCTANCE	250	US	--	--	900	US
4/1/2015	SPECIFIC CONDUCTANCE	500	US	--	--	900	US
9/24/2018	SULFATE	9.8	MG/L	--	--	250	MG/L
4/1/2015	SULFATE	41	MG/L	--	--	250	MG/L
4/1/2015	TERT-BUTYL ALCOHOL	4.1	UG/L	--	--	--	--
9/24/2018	TOTAL DISSOLVED SOLIDS	150	MG/L	--	--	500	MG/L
4/1/2015	TOTAL DISSOLVED SOLIDS	310	MG/L	--	--	500	MG/L
4/1/2015	TURBIDITY, LABORATORY	0.3	NTU	--	--	5	UNITS
9/24/2018	TURBIDITY, LABORATORY	1.4	NTU	--	--	5	UNITS
4/1/2015	URANIUM (PCI/L)	1.7	PCI/L	20	PCI/L	--	--

WELL ID 5410038-032

LABORATORY ANALYTICAL RESULTS

Comparison to California Maximum Contaminant Levels and Secondary Maximum Contaminant Levels in Drinking Water

SAMPLE DATE	ANALYSIS	LABORATORY ANALYTICAL RESULT	UNITS	MCL		SMCL	
4/1/2015	ZINC	62	UG/L	--	--	5000	UG/L

US = Microsiemens

-- = No Data Available

RED exceeds MCL or SMCL

MG/L = Milligrams per Liter

UG/L = Micrograms per Liter

MCL - Maximum Contaminant Level (California)

SMCL - Secondary Maximum Contaminant Level (California)

APPENDIX B

INDUSTRIAL ACTIVITIES STORM WATER POLLUTION PREVENTION PLAN

Deer Creek Rock Company, Inc.

Industrial Activities Storm Water Pollution Prevention Plan

27671 Avenue 120, Porterville, CA 93257
June 2015

Waste Discharge Identification (WDID):
5F54I018329

Exceedance Response Action (ERA) Status:
Baseline

Legally Responsible Person (LRP):
Deer Creek Rock Co., Inc.
27671 Avenue 120, Porterville ,CA 93257
W. Jaxon Baker, President
(530) 241-2112

Duly Authorized Representatives:
Rhonda Nunnelley
Kim Seabourn
Leonard Bandell
(530) 241-2112

Prepared for: (if different than LRP)
(same as LRP)

SWPPP Prepared by:
Provost & Pritchard Consulting Group
2505 Alluvial Avenue, Clovis California 93611

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Report Prepared for:

Deer Creek Rock Co., Inc.
27671 Avenue 120
Porterville, CA 93257

Contact:
Daryl Pernu
(559)793-0903

Report Prepared by:

Provost & Pritchard Consulting Group

Hilary Reinhard, PE, QSD, QSP
Gretchen Heisdorf, PE, QSD, QSP
David Norman, Principal Environmental Specialist
Kevin Claybaugh, Assistant Environmental Specialist

Contact:
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(559) 326-1100

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Legally Responsible Person

Approval and Certification of the Storm Water Pollution Prevention Plan

Facility Name: Deer Creek Rock Company, Inc.

Waste Discharge Identification (WDID): 5F54I018329

"I certify under penalty of law that this document and all Attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

W. Jaxon Baker
Legally Responsible Person

Signature of Legally Responsible Person

Date 6/29/15

W. Jaxon Baker
Name of Legally Responsible Person

(530) 241-2112
Telephone Number

Amendment Log

Facility Name: Deer Creek Rock Company, Inc.

Waste Discharge Identification (WDID): 5F54I018329

Amendment Log					
Amendment No.	Date	Page and Section No.	Requested By	Brief Description of Amendment; include reason for change, site location, and BMP modifications.	Prepared and Approved By

1 SWPPP Requirements

1.1 Introduction

The Deer Creek Rock Co., Inc. site comprises approximately 120 acres and is located at 27671 Avenue 120 in Porterville, California. The property is owned and operated by Deer Creek Rock Company, Inc. The facility plant manager is Daryl Pernu. The facility location is shown on the Site Map(s) in Appendix A.

This Storm Water Pollution Prevention Plan (SWPPP) is designed to comply with California's General Permit for Storm water Discharges Associated with Industrial Activities (General Permit) Order No. 2014-0057-DWQ (NPDES No. CAS000001) issued by the State Water Resources Control Board (State Water Board). This SWPPP has been prepared following the SWPPP Template provided on the California Storm water Quality Association Storm water *Best Management Practice Handbook Portal: Industrial and Commercial* (CASQA 2014). In accordance with the General Permit, Section X.A, this SWPPP contains the following required elements:

- Facility Name and Contact Information;
- Site Map;
- List of Significant Industrial Materials;
- Description of Potential Pollution Sources;
- Assessment of Potential Pollutant Sources;
- Minimum BMPs;
- Advanced BMPs, if applicable;
- Monitoring Implementation Plan (MIP);
- Annual Comprehensive Facility Compliance Evaluation (Annual Evaluation); and,
- Date that SWPPP was Initially Prepared and the Date of Each SWPPP Amendment, if Applicable.

1.2 Permit Registration Documents

Required Permit Registration Documents (PRDs) were submitted to the State Water Board via the Storm water Multi Application and Report Tracking System (SMARTS) by the Legally Responsible Person (LRP), or authorized personnel (i.e., Approved Signatory) under the direction of the LRP. The project-specific PRDs include:

1. Notice of Intent (NOI);
2. Signed Certification Statement (LRP Certification is provided electronically with SMARTS PRD submittal);
3. Site Map(s);
4. SWPPP; and
5. Annual Fee.

- The Site Map(s) can be found in Appendix A. A copy of the submitted PRDs are also kept in Appendix B of the SWPPP along with the Waste Discharge Identification (WDID) confirmation.
- The SWPPP uploaded into SMARTS should not include a copy of the General Permit.
- In the event of future significant changes to the facility layout, the Discharger will certify and submit new PRDs via SMARTS.

1.3 SWPPP Availability and Implementation

The SWPPP is available on-site to all employees during all hours of operation (see Section 2.2 for the Operations Schedule), and will be made available upon request by a State or Municipal inspector. The SWPPP will be implemented by July 1, 2015.

1.4 Pollution Prevention Team

Facility staff that have been designated as Pollution Prevention Team members are listed below in Table 1.1., along with their responsibilities and duties. A list of alternate team members is also provided, and these personnel will perform SWPPP activities when regular members of the Pollution Prevention Team are absent or unavailable. This table will be updated as needed when there are changes to staff and staff responsibilities. All team members will be trained to perform the duties assigned to them. Employee training logs are provided in Appendix C.

If the facility is taken out of Baseline conditions a QISP(s) will be identified in Appendix D. At that time the QISP, along with those identified in Table 1-1 will have primary responsibility for providing training to the appropriate team members assigned to perform the activities required in this SWPPP.

Table 1-1. Pollution Prevention Team

Pollution Prevention Team			
Name	**Title**	**Telephone**	**Responsibilities and Duties**
Daryl Pernu	Plant Manager	(559)793-0903	Facility BMP implementation and ongoing repair oversight. Facility staff training, inspections and sampling as necessary.
Adam Plunk	Foreman	(559)793-0903	Facility BMP implementation and ongoing repair oversight. Facility staff training, inspections and sampling as necessary.
Mike Davis	Quality Control Technician	(559)793-0903	Facility BMP implementation and ongoing repair oversight. Facility staff training, inspections and sampling as necessary.

1.5 Duly Authorized Representatives

Duly Authorized Representative(s) who are responsible for SWPPP implementation and have authority to sign PRDs are listed below in Table 1.2. Written authorizations from the LRP for these individuals are provided in Appendix D.

Table 1-2. Duly-Authorized Representatives

Duly-Authorized Representatives		
Name	Title	Telephone
Rhonda Nunnelley	Compliance Coordinator	(530) 241-2112
Kim Seabourn	Legal Assistant	(530) 241-2112
Leonard Bandell	Legal Counsel	(530) 241-2112

1.6 Permits and Governing Documents

In addition to the General Permit, the following documents have been taken into account while preparing this SWPPP:

- Central Valley Regional Water Quality Control Board: Notice of Violation – March 11,2015
- Central Valley Regional Water Quality Control Board:
  Industrial Storm Water Inspection Report - February 9, 2015
- Storm Water Pollution Prevention Plan for Deer Creek Rock Co., Inc.

  August 2003 (Revised November 2006)
- Spill Prevention Control and Countermeasure Plan Deer Creek Asphalt

  June 22 2011 (revised February 2014)
- Jaxon Enterprises Deer Creek Asphalt Hazardous Materials Business Plan April 16 2015.
- CASQA 2012, Storm water BMP Handbook Portal: Industrial Commercial, August 2014, www.casqa.org

1.7 SWPPP Amendments

This SWPPP will be amended or revised as needed. A list of amendments (Amendment Log) is included in the front of this SWPPP (page 7), and amendment certifications are included in Appendix E. The Amendment Log will include the date of initial preparation and the date of each amendment. The SWPPP should be revised when:

- There is a General Permit violation;
- There is a reduction or increase in the total industrial area exposed to Storm water;
- BMPs do not meet the objectives of reducing or eliminating pollutants in Storm water discharges;
- There is a change in industrial operations which may affect the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4);
- There is a change to the parties responsible for implementing the SWPPP; or
- Otherwise deemed necessary by the QISP.

The following items will be included in each amendment:

- Who requested the amendment;
- The location of proposed change;
- The reason for change;
- The original BMP(s) proposed, if any; and
- The new BMP(s) proposed.

Amendments will be logged at the front of the SWPPP and certification kept in Appendix E. The SWPPP text will be revised replaced, and/or hand annotated as necessary to properly convey the amendment. SWPPP amendments must be certified and submitted by the LRP or their designated Duly Authorized Representative via SMARTS within 30 days whenever the SWPPP contains significant revisions. With the exception of significant revisions, SWPPP changes will be certified and uploaded to SMARTS once every three (3) months in the reporting year.

1.8 Retention of Records

Paper or electronic records of documents required by this SWPPP will be retained for a minimum of five (5) years from the date generated or date submitted, whichever is later, for the following items:

- Employee Training Records;
- BMP Implementation Records;
- Spill and Clean-up Related Records;
- Records of Sampling and Analysis Information
  - The date, exact location, and time of sampling or measurement;
  - The date(s) analyses were performed;
  - The individual(s) that performed the analyses;
  - The analytical techniques or methods used; and
  - The results of such analyses;
- Records of Visual Observations
  - The date
  - The industrial areas/drainage areas of the facility observed during the inspection (Location);
  - The approximate time of the observation;
  - Presence and probable source of observed pollutants; and
  - Name of the individual(s) that conducted the observations;
- Response to the observations including identification of SWPPP revisions if needed.Level 1 ERA Reports;
- Level 2 ERA Action Plan;
- Level 2 ERA Technical Report; and
- Annual Reports from SMARTS (checklist and any explanations).

Copies of these records will be available for review by the Water Board's staff at the facility during scheduled facility operating hours. Upon written request by U.S. EPA or the local MS4, Dischargers will provide paper or electronic copies of requested records to the Water Boards, U.S. EPA, or local MS4 within ten (10) working days from receipt of the request.

1.9 Exceedance Response Actions (ERAs)

If a General Permit NAL exceedance occurs in a given reporting year, a Level 1 ERA Evaluation and a Level 1 ERA Report will be required in the following year, or, if in a subsequent year, a Level 2 ERA Action Plan and a Level 2 ERA Report will be required in accordance with the General Permit. The results of either of the ERA reports may require that the SWPPP be amended.

1.10 Annual Comprehensive Facility Compliance Evaluation

The General Permit (Section XV) requires the Discharger to conduct one Annual Comprehensive Facility Compliance Evaluation (Annual Evaluation) for each reporting year (July 1 to June 30). Annual Evaluations will be conducted at least eight (8) months and not more than sixteen (16) months after the previous Annual Evaluation. The planned window for conducting the Annual Evaluation is between April and June of each year. The SWPPP will be revised, as appropriate based on the results of the Annual Evaluation, and the revisions will be implemented within 90 days of the Annual Evaluation.

At a minimum, Annual Evaluations will consist of:

- A review of all sampling, visual observation, and inspection and monitoring records and sampling and analysis results conducted during the previous reporting year;
- A visual inspection of all areas of industrial activity and associated potential pollutant sources for evidence of, or the potential for, pollutants entering the Storm water conveyance system;
- A visual inspection of all drainage areas previously identified as having no exposure to industrial activities and materials in accordance with the definitions in Section XVII;
- A visual inspection of equipment needed to implement the BMPs;
- A visual inspection of any BMPs;
- A review and effectiveness assessment of all BMPs for each area of industrial activity and associated potential pollutant sources to determine if the BMPs are properly designed, implemented, and are effective in reducing and preventing pollutants in industrial Storm water discharges and authorized NSWDs; and
- An assessment of any other factors needed to comply with the Annual Reporting requirements in General Permit Section XVI.B.

1.11 Annual Report

The Annual Report will be prepared, certified, and electronically submitted no later than July 15th following each reporting year using the standardized format and checklists in SMARTS based on the reporting requirements identified in Section XVI of the General Permit. Annual reports will be submitted in SMARTS and in accordance with information required by the on-line forms.

1.12 Termination and Changes to general Permit Coverage

When any of the following conditions occur, termination of coverage under the General Permit will be requested by certifying and submitting a Notice of Termination (NOT) via SMARTS:

- Operation of the facility has been transferred to another entity;
- The facility has ceased operations, completed closure activities, and removed all industrial related pollutant generating sources;
- The facility's operations have changed and are no longer subject to the General Permit.

The SWPPP and all of the provisions of the General Permit will be complied with until a valid NOT is received and accepted by the Board.

If ownership changes, the new owner of the facility will be notified of the General Permit and regulatory requirements for permit coverage.

2 Facility Information

2.1 Facility Description

2.1.1 Facility Location

The Deer Creek Rock Co., Inc. facility comprises approximately 120 acres and is located at 27671 Avenue 120, in Porterville California. The facility is located approximately 8 miles southeast of Porterville, CA, and borders Deer Creek on the north edge of the property. The facility is located at Latitude: 36.006464 Longitude: -118.952958 and is identified on the Site Map(s) in Appendix A.

The project discharges to Deer Creek that does have adopted TMDLs or that is listed for water quality impairment on the most recent 303(d)-list for the following impairments:

- High pH

2.1.2 Facility Operations

Operations at the Deer Creek Rock Co., Inc. facility consist of all activities required to mine aggregate and manufacture asphalt. A list of specific industrial activities is provided below:

- Excavate solid rock
- Crush and screen into various size aggregate
- Washing of some aggregates
- Stockpile aggregate for future use
- Manufacture of asphalt products

2.1.3 Existing Conditions

The facility site consists of an office building and cargo containers on the north border of the property. Also on the central acreage are the asphalt hot plant and the upper and lower crushing plants. Excavation takes place in various locations on the property. There is a depression that acts as a retention location in large storm events near the center of the property and 3 settling ponds on the southern acreage. The western acreage is used for stockpiling aggregate. All 120 acres of the developed area, are directly exposed to precipitation and storm water runoff, with less than 1% of the site being impervious. Existing BMPs at this facility are described in Section 3.

There are no known historic sources of contamination at the site.

2.1.4 Description of Drainage Areas and Existing Drainage

The facility is divided into 4 drainage areas: West, Central, East, and South, as shown on the Site Flow Map(s) in Appendix A. The Site Flow Map(s) shows the area layout, including the general site topography, storm drainage system, drainage inlets, its respective drainage areas, and discharge locations.
The facility site is sloped so as that most drainage flows to the NW. There are 4 distinct drainage areas, as described below. The elevation of the project site ranges from approximately 550' to 800' feet above mean sea level (amsl). Surface drainage at the site currently flows to the northwest, towards Deer Creek. Storm

water is conveyed through surface runoff and diverted with earthen berms in effort to prevent runoff from discharging off site.

Detailed descriptions of all drainage areas are provided below.
Area 1: West Acreage: Is generally flat and does not drain in any specific direction. If drainage were to occur it would be towards the discharge location in the NW corner of Area 2.

Area 2: Central Acreage: Contains the office, asphalt plant, and main excavation site. It is sloped and generally drains to the center of the site and toward the NW. There is 1 discharge point on the northwest border of area 2 – a gravel road that slopes down to Deer Creek from the NW corner of Area 2.

Area 3: East Acreage: Generally drains north and then to the west joining the discharge at the main driveway from the Area 2. There is 1 discharge point on the north border of area 3 – the main driveway off Deer Creek Rd. (Avenue 120).

Area 4: South Acreage: Contains 3 settling ponds and generally drains west toward said ponds.

2.1.5 Storm water Run-On from Offsite Areas

There is no anticipated offsite run-on to this site because the site is on the side of a foothill whose peak runs on the southeast side of the property and flow on the site and surrounding areas generally runs to the northwest into Deer Creek.

2.1.6 Geology and Groundwater

The site is primary underlain by cibo-rock outcrop complex. Cibo soils are found on 2-75 percent slopes, formed by weathered materials for basic igneous rock. Cibo is characterized as being moderately deep, well drained, having medium to rapid runoff after cracks have swelled shut and low permeability. Cibo-rock outcrop complex is approximately 50 percent Cibo, 25 percent rock outcrop , with mix of ±5 percent of other soils making up the remaining 25 percent. Groundwater occurs beneath the site at approximately 100' feet below ground surface. The groundwater gradient is toward the northwest.

The site is on the Tule Sub-basin of the Tulare Lake Basin. The beneficial uses are listed in the Tulare Lake Basin Plan for the detailed analysis unit (DAU) 243 as municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), industrial process supply (PRO), and wildlife habitat (Wild).

2.2 Operations Schedule

The Deer Creek Rock Co., Inc. facility is permitted to operate Monday through Saturday, 6:00am to 7:00pm. Industrial activities during this time period consist of excavation of aggregate and manufacturing of asphalt. Variations in actual operating hours may occur as necessary. The facility operates nearly year-round with variability in the winter months. Operations are typically ceased during the month of January, but this time could be lengthened or shortened depending on weather and demand.

This SWPPP will be implemented, and a copy made available to all facility staff at all times. A copy will be available to regulatory agency personnel upon request.

2.3 Pollutant Source Assessment

This section presents a list of all industrial materials and potential pollutant sources at the Deer Creek Rock Co., Inc. facility. It identifies specific pollutants associated with these sources and pollutant sources that are most susceptible to Storm water exposure. A summary of significant spill and leaks that have occurred onsite is also provided.

2.3.1 Description of Potential Pollutant Sources

Table 2.1 includes a list of industrial activities and associated materials that are anticipated to be used onsite. These activities and associated materials will or could potentially contribute pollutants to Storm water runoff. The anticipated activities and associated pollutants provided in Table 2.1 are the basis for selecting the BMPs for the facility as described in Section 3. Locations of all material stockpiles, storage areas, anticipated pollutants, and associated BMPs are show on the Site Map(s) in Appendix A.

Table 2-1. Industrial Activities and Associated Materials

Industrial Activities and Associated Materials						
Industrial Activity	Associated Industrial Materials	Material Quantity	Material Physical Characteristics	Material Location	Associated Pollutants	Storm water Exposure Pathway
Operation of asphalt plant, Truck staging	Spills/leaks at storage tanks, equipment and machinery leaks, Aspalt spillage, vehicular and equipment traffic	Undetermined	Debris, oily residue	Asphalt plant	Diesel fuel, Petroleum based lubricants, asphalt, dust, sediment	Direct
Blasting, clearing moving aggregate	Loose/falling rocks, denuded surfaces, Leaks from vehicles and equipment, Vehicular and equipment traffic	Undetermined	Debris, oily residue	Quarry including roads and accessory areas	Petroleum based lubricants,dust, sediment	Direct
Running crushers and screens	Spills/leaks at tanks, equipment and machinery leaks, vehicular and equipment traffic	Undetermined	Fine particles	Crushing/screening plant	Diesel fuel, Petroleum based lubricants, dust, sediment	Direct
Storage of material, loading & unloading aggregates	Fine particles on aggrgates, Equipment leaks	Undetermined	Fine particles	Aggregate Stockpiles	Sediment, dust, petroleum based lubricants	Direct
Storage of material, parking of vehicles and equipment	Leaks from vehicles and equipment, stored metal and wood products, Vehicular and equipment traffic, batteries	Undetermined	Fines, liquids, solids	Office, parking, & storage	Petroleum lubricants, minor dust, sediment & metalls, acid	Minimal, parking only

Industrial Activities and Associated Materials						
Industrial Activity	Associated Industrial Materials	Material Quantity	Material Physical Characteristics	Material Location	Associated Pollutants	Storm water Exposure Pathway
Fueling	Spills/leaks during delivery, Spills caused by topping off, Leaking storage tanks, batteries	10,795 gal of petroleum products	Liquid and thick liquids	Vehicle fueling and petroleum storage	Diesel, Gasoline, Acid	direct
Topsoil erosion	Sediments/erosion	undetermined	Fine particles	Topsoil & overburden storage, Bare ground	Erosion/sediments	Direct

2.3.2 Significant Spills and Leaks

Table 2.2 includes a list of industrial materials where spills and leaks have potential to occur, and includes material characteristics, quantities, locations, and containers. Spills and leaks will be prevented by implementing the BMPs described in Section 3.

No significant spills or leaks in the last 5 year period.

Table 2-2. Potential Material Spills and Leaks

Potential Material Spills and Leaks				
Industrial Material	Material Physical Characteristics	Material Quantity	Material Container	Material Location
Asphalt	Thick viscous; Nearly solid when not heated	465 Tons	Steel	Asphalt Plant
Antistrip Additive	Liquid	250 gal	Plastic tote	Asphalt Plant
Drive Train Fluid	Liquid	55 gal	Steel	Fueling Station
Propane	Liquid	26,000 gal	Steel	AST between Office and Plant
Acetylene	Gas	(8) 125 cf/cyl.	Steel	Fueling Station
Heat Transfer Oil	Liquid	400 gal	Steel	Fueling Station
Diesel Fuel	Liquid	9000 gal	Steel	Fueling Station
Gasoline	Liquid	250 gal	Steel	Fueling Station
Gear Lubricant	Liquid	225 gal	Steel	Fueling Station
Hydraulic Oil	Liquid	300 gal	Steel	Fueling Station
Motor Oil	Liquid	335 gal	Steel	Fueling Station
Oxygen	Gas	(8) 278 cf/cyl.	Steel	Fueling Station
Presurflo – All Viscosities	Liquid	300 gal	Steel	Fueling Station

Table 2-3. Spills and Leaks within Previous Five-Year Period

No reported releases in the last 5 year period

Potential Material Spills and Leaks					
Industrial Material	Material Physical Characteristics	Location of Spill or Leak	Quantity Spilled or Leaked	Quantity Discharged from Site	Remaining Quantity with Potential for Discharge
n/a					

2.4 Identification of Non-Storm water Discharges (NSWDs)

Non-Storm water discharges (NSWDs) consist of discharges which do not originate from precipitation events. The General Permit provides allowances for specified NSWDs provided they:

- Do not cause erosion;
- Do not carry other pollutants;
- Are not prohibited by the local MS4; and
- Do not require a separate NPDES Permit from the Regional Water Board.

NSWDs into storm drainage systems or waterways, which are not authorized under the General Permit and listed in the SWPPP, or authorized under a separate NPDES permit, are prohibited.

Non-Storm water discharges that are authorized at this facility include the following:

- NONE

These authorized NSWDs will be managed with the Storm water and non-Storm water BMPs described in Section 3 of this SWPPP. These BMPs are implemented to:

- Reduce or prevent the contact of authorized NSWDs with materials or equipment that are potential sources of pollutants;
- Reduce, to the extent practicable, the flow or volume of authorized NSWDs;
- Ensure that authorized NSWDs do not contain quantities of pollutants that cause or contribute to an exceedance of a water quality standards; and
- Reduce or prevent discharges of pollutants in authorized NSWDs in a manner that reflects best industry practice considering technological availability and economic practicability and achievability.

Monthly visual observations will be conducted according to the General Permit (Section XI.A.1) for NSWDs and sources to ensure adequate BMP implementation and effectiveness. Monthly visual observations include observations for evidence of unauthorized NSWDs.

Activities at this site that may result in unauthorized non-Storm water discharges include:

- Aggregate washing

Steps will be taken, including the implementation of appropriate BMPs as defined in Section 3, to ensure that unauthorized NSWDS are eliminated, controlled, disposed off-site, or treated on-site.

The following discharge(s) are authorized by (a) regional NPDES permit(s):

- NONE

2.5 Required Site Map(s) Information

The facility's Site Map(s) is (are) provided in Appendix A, and include(s) all information required by the General Permit. The maps include information regarding the facility boundary and Storm water drainage areas, nearby water bodies, locations of Storm water collection and conveyance systems including outfalls, locations and descriptions of all industrial activities and materials, and locations and descriptions of all structural control measures.

A summary of all information provided in the Site Map(s) is provided in Table 2.4 below.

Table 2-4. Required Site Map(s) Information Checklist

Required Site Map(s) Information Checklist	
Included on Site Map(s)? Yes/No/ NA	**Required Element**
Yes	The facility boundary
Yes	Storm water drainage areas within the facility boundary
NA	Portions of any drainage area impacted by discharges from surrounding areas
Yes	Flow direction of each drainage area
Yes	On-facility surface water bodies
NA	Areas of soil erosion
Yes	Location(s) of nearby water bodies (such as rivers, lakes, wetlands, etc.)
NA	Location(s) of municipal storm drain inlets that may receive the facility's industrial Storm water discharges and authorized NSWDs
Yes	Locations of Storm water collection and conveyance systems and associated points of discharge, and direction of flow
Yes	Any structural control measures (that affect industrial Storm water discharges, authorized NSWDs, and run-on)
Yes	All impervious areas of the facility, including paved areas, buildings, covered storage areas, or other roofed structures
Yes	Locations where materials are directly exposed to precipitation
NA	Locations where significant spills or leaks (Section X.G.1.d of the General Permit) have occurred
Yes	Areas of industrial activity subject to the General Permit
Yes	All storage areas and storage tanks
Yes	Shipping and receiving areas
Yes	Fueling areas
Yes	Vehicle and equipment storage/maintenance areas
Yes	Material handling and processing areas
NA	Waste treatment and disposal areas
Yes	Dust or particulate generating areas
NA	Cleaning and material reuse areas
Yes	Any other areas of industrial activity which may have potential pollutant sources

3 Best Management Practices

3.1 Minimum BMPs

All minimum BMPs that are required by the General Permit and necessary to meet the facility conditions will be implemented. Guidance for BMP implementation is provided in the CASQA Storm water BMP Handbook Portal: Industrial and Commercial Fact Sheets and the relevant fact sheets are included in Appendix G. Sections 3.1.1 through 3.1.5 list the requirements for each of these minimum BMPs. Minimum BMPs will be implemented for additional targeted industrial activities, equipment, and materials as necessary. If any of the required minimum BMPs are applicable but cannot be implemented, an explanation and alternative approach will be provided in the following sections.

Table 3.1 provides a list of the five minimum General Permit BMP elements that are included in the relevant BMP fact sheets and indicates which BMPs are implemented at the facility. Employee Training, described in Section 3.1.6, and Quality Assurance and Record Keeping, described in Section 3.1.7, are additional minimum BMPs that will be implemented.

As required by the General Permit, a summary of all implemented BMPs is included in Section 3.3. The schedule for BMP implementation and the requirements for inspection and maintenance are contained in Section 4.

Table 3-1. Minimum BMPs

Minimum BMPs									
CASQA Fact Sheet Number	CASQA BMP Fact Sheet Name	Addresses Minimum General Permit BMP Requirements					BMP to be Implemented?		
		Good Housekeeping	Preventative Maintenance	Spill and Leak Prevention and Response	Material Handling and Waste Management	Erosion and Sediment Control	YES	NO	Not Applicable
SC-10	Non-Storm Water Discharges	✓		✓			✓		
SC-11	Spill Prevention, Control, and Cleanup			✓			✓		
SC-20	Vehicle and Equipment Fueling	✓	✓	✓	✓		✓		
SC-21	Vehicle and Equipment Cleaning	✓	✓	✓	✓		✓		
SC-22	Vehicle and Equipment Maintenance and Repair	✓	✓	✓	✓		✓		
SC-30	Outdoor Loading and Unloading	✓		✓	✓		✓		
SC-31	Outdoor Liquid Container Storage	✓	✓	✓	✓		✓		
SC-32	Outdoor Equipment Operations	✓	✓	✓	✓		✓		
SC-33	Outdoor Storage of Raw Materials	✓	✓	✓		✓	✓		
SC-34	Waste Handling and Disposal	✓	✓	✓	✓		✓		
SC-35	Safer Alternative Products								✓
SC-40	Contaminated or Erodible Surfaces					✓	✓		
SC-41	Building and Grounds Maintenance	✓		✓	✓		✓		
SC-42	Building Repair, Remodeling, and Construction	✓		✓	✓	✓	✓		
SC-43	Parking Area Maintenance						✓		
SC-44	Drainage System Maintenance	✓	✓	✓			✓		

Minimum BMPs									
CASQA Fact Sheet Number	CASQA BMP Fact Sheet Name	Addresses Minimum General Permit BMP Requirements					BMP to be Implemented?		
		Good Housekeeping	Preventative Maintenance	Spill and Leak Prevention and Response	Material Handling and Waste Management	Erosion and Sediment Control	YES	NO	Not Applicable
Additional BMPs Implemented:									
n/a									
n/a									

3.1.1 Good Housekeeping

The following good housekeeping measures will be implemented in accordance with the General Permit (Section X.H.1.a):

- Observe all outdoor areas associated with industrial activity including Storm water discharge locations, drainage areas, conveyance systems, waste handling/disposal areas, and perimeter areas impacted by off-facility materials or Storm water run-on to determine housekeeping needs. Any identified debris, waste, spills, tracked materials, or leaked materials will be cleaned and disposed of properly;
- Minimize or prevent material tracking;
- Minimize dust generated from industrial materials or activities;
- Ensure that all facility areas impacted by rinse/wash waters are cleaned as soon as possible;
- Cover all stored industrial materials that can be readily mobilized by contact with Storm water (excluding aggregate/soil stockpiles);
- Contain all stored non-solid industrial materials or wastes (e.g., particulates, powders, shredded paper, etc.) that can be transported or dispersed via by the wind or contact with Storm water;
- Prevent disposal of any rinse/wash waters or industrial materials into the Storm water conveyance system;
- Minimize Storm water discharges from non-industrial areas (e.g., Storm water flows from employee parking area) that contact industrial areas of the facility; and
- Minimize authorized NSWDs from non-industrial areas (e.g., potable water, fire hydrant testing, etc.) that contact industrial areas of the facility.

BMPs to be implemented are summarized in Table 3.1 and the BMP fact sheets are included in Appendix G.

3.1.2 Preventative Maintenance

The following preventative maintenance measures will be implemented in accordance with the General Permit (Section X.H.1.b):

- Identify all equipment and systems used outdoors that may spill or leak pollutants;
- Observe the identified equipment and systems to detect leaks, or identify conditions that may result in the development of leaks;
- Establish an appropriate schedule for maintenance of identified equipment and systems; and
- Establish procedures for prompt maintenance and repair of equipment, and maintenance of systems when conditions exist that may result in the development of spills or leaks.

Specific preventative maintenance BMPs to be implemented at the facility are provided in Table 3.1 and the BMP fact sheets are included in Appendix G.

3.1.3 Spill and Leak Prevention and Response

The following spill and leak prevention and response measures will be implemented in accordance with the General Permit (Section X.H.1.c):

- Follow procedures and/or controls to minimize spills and leaks according to SPCC plan and Hazardous Material Plan;
- Address spill and leak response procedures to prevent industrial materials from discharging through the Storm water conveyance system. Spilled or leaked industrial materials will be cleaned promptly and disposed of properly;
- Identify and describe all necessary and appropriate spill and leak response equipment, location(s) of spill and leak response equipment, and spill or leak response equipment maintenance procedures; and
- Identify and train appropriate spill and leak response personnel.

Specific spill and leak prevention and response BMPs to be implemented at the Deer Creek Rock Co., Inc. facility are provided in Table 3.1 and the BMP fact sheets are included in Appendix G. Secondary containments have been employed at all chemical storage areas. The site has been graded as such that any releases would remain on site. Parking areas are periodically scrapped to remove soils contaminated by vehicle leaks. The resulting contaminated materials are then properly disposed.

3.1.4 Material Handling and Waste Management

The following material handling and waste management measures will be implemented in accordance with the General Permit (Section X.H.1.d):

- Prevent or minimize handling of industrial materials or wastes that can be readily mobilized by contact with Storm water during a storm event;
- Contain all stored non-solid industrial materials or wastes (e.g., particulates, powders, shredded paper, etc.) that can be transported or dispersed by the wind or contact with Storm water during handling;
- Cover industrial waste disposal containers and industrial material storage containers that contain industrial materials when not in use;
- Divert run-on and Storm water generated from within the facility away from all stockpiled materials;
- Clean all spills of industrial materials or wastes that occur during handling in accordance with the spill response procedures (Section X.H.1.c); and
- Observe and clean as appropriate, any outdoor material or waste handling equipment or containers that can be contaminated by contact with industrial materials or wastes.

Specific material handling and waste management BMPs to be implemented at the Deer Creek Rock Co., Inc. facility are provided in Table 3.1 and the BMP fact sheets are included in Appendix G. A third party is contracted for removal of all industrial waste.

3.1.5 Erosion and Sediment Controls

The following erosion and sediment control measures will be implemented in accordance with the General Permit (Section X.H.1.e):

- Implement effective wind erosion controls;
- Provide effective stabilization for all disturbed soils and other erodible areas prior to a forecasted storm event;
- Maintain effective perimeter controls and stabilize all site entrances and exits to sufficiently control discharges of erodible materials from discharging or being tracked off the site;

- Divert run-on and Storm water generated from within the facility away from all erodible materials; and
- If sediment basins are implemented, ensure compliance with the design storm standards in Section X.H.6. of the General Permit.

Specific erosion and sediment control BMPs to be implemented at the Deer Creek Rock Co., Inc. facility are provided in Table 3.1 and the BMP fact sheets are included in Appendix G

3.1.6 Employee Training Program

An employee training program will be implemented in accordance with the following requirements in the General Permit (Section X.H.1.f):

- Ensure that all team members implementing the various compliance activities of this SWPPP are properly trained in topics including but not limited to: BMP implementation, BMP effectiveness evaluations, visual observations, and monitoring activities;
- Prepare or acquire appropriate training manuals or training materials;
- Identify which personnel need to be trained, their responsibilities, and the type of training they will receive;
- Provide a training schedule; and
- Maintain documentation of all completed training classes and the personnel that received training in the SWPPP.

The Pollution Prevention Team will be trained in implementing the various compliance activities specified in this SWPPP, and documentation of training activities is retained in SWPPP Appendix C. To promote Storm water management awareness specific for this facility, refresher training will be provided annually.

Task specific training for all employees engaged in activities that have the potential to cause Storm water pollution will be conducted when new employees are hired and refresher training will be provided annually.

This facility's Baseline Training will be performed by qualified personnel. The training personnel will be responsible for providing information during training sessions and subsequently completing the training logs shown in Appendix C, which identifies the site-specific Storm water topics covered as well as the names of site personnel who attended the meeting. Each team member will be trained in the specific role they are responsible to undertake.

3.1.7 Quality Assurance and Record Keeping

The following quality assurance and record keeping activities will be performed in accordance with the requirements in the General Permit (Section X.H.1.g):

- Develop and implement management procedures to ensure that appropriate staff implements all elements of the SWPPP, including the Monitoring Implementation Plan (SWPPP Section 5);
- Develop a method of tracking and recording the implementation of BMPs identified in the SWPPP; and
- Maintain the BMP implementation records, training records, and records related to any spills and clean-up related response activities for a minimum of five (5) years as required in the General Permit (Section XXI.J.4).

BMPs will be implemented according to the schedule and procedures presented in SWPPP Section 4. BMPs will be implemented by properly trained team members as documented in Appendix C.

Visual observations will be performed as described in SWPPP Section 5.5. Potential pollutant sources and BMPs will be inspected during visual observations, and new BMPs will be implemented as needed. Records of visual observations of BMP implementation will be retained in Appendix H. Blank monthly BMP inspection report forms are included in Appendix H. These forms will be used to track the implementation of the BMPs identified in this SWPPP.

Paper or electronic records of documents required by this SWPPP will be retained for a minimum of five (5) years from the date generated or date submitted, whichever is later, for the following items:

- Employee Training Records;
- BMP Implementation Records;
- Spill and Clean-up Related Records;
- Records of Monitoring Information
  - The date, exact location, and time of sampling or measurement;
  - The date(s) analyses were performed;
  - The individual(s) that performed the analyses;
  - The analytical techniques or methods used; and
  - The results of such analyses;
- Level 1 ERA Reports;
- Level 2 ERA Action Plan;
- Level 2 ERA Technical Report; and
- Annual Reports.

3.2 Advanced BMPs

All new treatment control BMPs employed by the Discharger shall be designed to comply with the design storm standards in Section X.H.6 of the General Permit.

3.2.1 Exposure Minimization BMPs

There are storm resistant shelters installed on site.

Table 3-2. Exposure Minimization BMPs

Exposure Minimization BMPs	
Shelter Location/Description	**Associated Industrial Activity/Material**
Pole Barn Shelter	Used waste barrels containing oil and filters

3.2.2 Storm water Containment and Discharge Reduction BMPs

Storm water containment and discharge reduction BMPs include BMPs that divert, reuse, contain, or reduce the volume of Storm water runoff. Specific Storm water containment and discharge reduction BMPs to be implemented at the Deer Creek Rock Co., Inc. facility are provided in Table 3.3 and the BMP fact sheets are included in Appendix G. The site is graded with a slope toward the center of the site leading to a primary retention pond on the central acreage.

Table 3-3. Storm water Containment and Discharge Reduction BMPs

Storm water Containment and Discharge Reduction BMPs					
CASQA Fact Sheet Number	CASQA BMP Factsheet Name	Meets Advanced BMP Requirement	BMP Used		BMP Location, Runoff Sources, and Potential Pollutants
			YES	NO	
TC-10	Infiltration Trench	✓		✓	
TC-11	Infiltration Basin	✓		✓	
TC-12	Harvest and Reuse	✓		✓	
TC-20	Wet Pond	✓	✓		Central (retention location only) and South acreages
TC-21	Constructed Wetland	✓		✓	
TC-22	Extended Detention Basin	✓		✓	
TC-30	Vegetated Swale			✓	
TC-31	Vegetated Buffer Strip			✓	
TC-32	Bioretention	✓		✓	
TC-40	Media Filter			✓	
TC-50	Water Quality Inlet			✓	
TC-60	Multiple Systems	✓		✓	
MP-20	Biotreatment			✓	
MP-40	Storm water Filter			✓	
MP-50	Wet Vault			✓	
MP-51	Gravity Separator			✓	
MP-52	Drain Inlet Insert			✓	
Alternate BMPs Used:					**If used, state reason:**
Earthen berm established around entire site					Prevent run-on, run-off
n/a					

3.2.3 Treatment Control BMPs

The site has been graded as such so that most flows move to a retention basin at the center of the site. An earthen berm has also been constructed around the majority of the site to prevent run-off and run- on.. Specific treatment control BMPs to be implemented at the Deer Creek Rock Co., Inc. facility are provided in Table 3.4 and the BMP fact sheets are included in Appendix G.

3.2.4 Other Advanced BMPs

Seed and mulch are spread on bare topsoil to prevent erosion, and silt fence and/or straw bale barriers are employed to catch sediment along concentrated drainage paths.

Table 3-4. Treatment Control BMPs

Treatment Control BMPs					
CASQA Fact Sheet Number	CASQA BMP Factsheet Name	Addresses O&M for Advanced BMPs	BMP Used		BMP Location, Runoff Sources, and Potential Pollutants
			YES	NO	
TC-10	Infiltration Trench	✓		✓	
TC-11	Infiltration Basin	✓		✓	
TC-12	Harvest and Reuse			✓	
TC-20	Wet Pond	✓	✓		Central and south acreages
TC-21	Constructed Wetland	✓		✓	
TC-22	Extended Detention Basin	✓		✓	
TC-30	Vegetated Swale	✓		✓	
TC-31	Vegetated Buffer Strip	✓		✓	
TC-32	Bioretention	✓		✓	
TC-40	Media Filter	✓		✓	
TC-50	Water Quality Inlet	✓		✓	
TC-60	Multiple Systems	✓		✓	
MP-20	Biotreatment	✓		✓	
MP-40	Storm water Filter	✓		✓	
MP-50	Wet Vault	✓		✓	
MP-51	Gravity Separator	✓		✓	
MP-52	Drain Inlet Insert	✓		✓	
Alternate BMPs Used:					**If used, state reason:**
Seed & mulch					Prevent erosion
Silt fence or straw bale barrier on perimeter					Sediment trap

3.3 BMP Summary Table

Table 3.5 summarizes the industrial activities, materials, pollutant sources, potential pollutants, and BMPs being implemented to prevent discharge of pollutants in Storm water runoff. Descriptions of the specific BMPs being implemented were provided in previous subsections. Implementation and maintenance of BMPs are described in Section 4.

Table 3-5. BMP Summary Table

BMP Summary Table					
Industrial Activity/Material	Pollutant Sources	Potential Pollutants	BMPs Implemented	CASQA BMP Fact Sheet Number	Required Equipment and Tools
Operation of asphalt plant, Truck staging	Spills/leaks at storage tanks, equipment and machinery leaks, Aspalt spillage, vehicular and equipment traffic	Diesel fuel, Petroleum based lubricants, asphalt, dust, sediment	Yes	SC-11, 20, 30, 31, 32, 34, 40, 43	Inspection, removal of affected soils with shovel or mechanized equipment, Standard maintenance tools, new and waste product storage
Blasting, clearing moving aggregate	Loose/falling rocks, denuded surfaces, Leaks from vehicles and equipment, Vehicular and equipment traffic	Petroleum based lubricants,dust, sediment	Yes	SC-11, 20, 30, 31, 32, 33, 40, 43	Mechanized equipment
Operating crushers and screens	Spills/leaks at tanks, equipment and machinery leaks, vehicular and equipment traffic	Diesel fuel, Petroleum based lubricants, dust, sediment	Yes	SC-10, 11, 21, 22, 30, 32, 33	Maintained crushing equipment, mechanized loading equipment
Storage of material, loading & unloading aggregates	Fine particles on aggrgates, Equipment leaks	Sediment, dust, petroleum based lubricants	Yes	SC-30, 32, 33, 40	Water truck, vehicles for loading product
Storage of material, parking of vehicles and equipment	Leaks from vehicles and equipment, stored metal and wood products, Vehicular and equipment traffic, batteries	Petroleum lubricants, minor dust, sediment & metalls, acid	Yes	SC-11, 41, 43	N/A
Fueling	Spills/leaks during delivery, Spills caused by topping off, Leaking storage tanks, batteries	Diesel, Gasoline, Acid	Yes	SC-10, 11, 20, 31, 32,	Electrical pumps, above ground storage tanks (ASTs) and plumbing
Top soil erosion	Bare topsoil	Erosion/sediments	Yes	SC-32, 40, 41	Shovels, earth moving equipment as necessary

4 BMP Implementation

4.1 BMP Implementation Schedule

The schedule for implementing all minimum and advanced BMPs is presented in Table 4.1. BMPs will be implemented as necessary to reduce or prevent transport of industrial pollutants in Storm water runoff. Slight modifications to this schedule may be necessary to achieve this goal. Records of BMP implementation will be included in Appendix H.

Table 4-1. BMP Implementation Schedule

BMP Implementation Schedule				
Industrial Activity/Material and Location	BMP Description	Person Responsible for Implementing BMP	Date and Time of Implementation	Implementation Duration
Operation of asphalt plant, Truck staging	-Secondary containment for diesel tank -Energy dissipater bar at discharge points -Housekeeping measures(pick up spilled asphalt) -Gravel/pave travel surfaces -Water non-paved travel surfaces -Train employees on proper fueling, cleanup and spill response techniques -Implement adequate protective maintenance program to prevent tank and line leaks -Inspect area daily to detect problems before they happen -Maintain 100'ft buffer from Deer Creek	Plant Manager, Foreman		On going

BMP Implementation Schedule				
Industrial Activity/Material and Location	BMP Description	Person Responsible for Implementing BMP	Date and Time of Implementation	Implementation Duration
Blasting, clearing moving aggregate	-Import explosives as needed; DO NOT store on site -Water use areas -Retention basin -Mulching & seeding -Gravel/pave roads	Plant Manager, Foreman		On going
Operating crushers and screens	-Secondary containment of petroleum products -Good housekeeping(Same as Asphalt plant)	Plant Manager, Foreman		On going
Storage of material, loading & unloading aggregates	-Gravel/asphalt Surfacing travel areas -Watering travel areas -Silt fence erodible stockpiles -Rock cobble dissipaters across travel ways -Settling basin	Plant Manager, Foreman		On going
Storage of material, parking of vehicles and equipment	-Inspect vehicles and use area regularly to detect any source of leaks. -Keep most stored products off of ground (pallets) Gravel circulation route where possible Cover/store batteries outside of precipitation	Plant Manager, Foreman		On going

BMP Implementation Schedule				
Industrial Activity/Material and Location	BMP Description	Person Responsible for Implementing BMP	Date and Time of Implementation	Implementation Duration
Fueling	-Secondary containment for all petroleum products -Minimize run-on to fueling area -implement adequate protective maintenance program to prevent tank leaks -Inspect fueling area daily to detect problems before they happen -Train employees on proper fueling, cleanup, and spill response techniques -Cover/store batteries outside of precipitation	Plant Manager, Foreman		On going
Top soil erosion	-Seed & mulch -Silt fence or straw bale barrier on perimeter -Mulch bare ground	Plant Manager, Foreman		On going

4.2 BMP Inspection and Maintenance

The General Permit requires, at a minimum, monthly observations of BMPs, along with inspections during sampling events. Monthly observations will be conducted during daylight hours of scheduled facility operating hours and on days without precipitation. A BMP observation checklist must be filled out for and maintained on-site with the SWPPP. The observation checklist includes the necessary information as discussed in Section 5.5. A blank observation checklist can be found in Appendix I, and completed checklists will be kept in Appendix H or in an accompanying file/binder that is referenced in the SWPPP and readily accessible on site.

BMPs will be maintained regularly to ensure proper and effective functionality. If necessary, corrective actions will be implemented within 72 hours of identified deficiencies and associated amendments to the SWPPP will be prepared and documented.

Specific guidance for maintenance, observation, and repair of advanced BMPs can be found in the BMP Factsheets in Appendix G.

5 Monitoring Implementation Plan

5.1 Purpose

This Monitoring Implementation Plan was developed to address the following objectives:

1. Identify the monitoring team;
2. Describe weather and rain event tracking procedures;
3. Describe discharge locations, visual observations procedures
4. Describe visual observation response procedures;
5. Describe sample collection and handling procedures;
6. Describe field instrumentation calibration instructions and intervals;
7. Provide justification for alternative discharge locations, Representative Sample Reduction (RSR), and Qualified Combined Samples (QCS), as applicable; and
8. Provide an example Chain of Custody form to be used when handling and shipping water quality samples to the laboratory.

5.2 Weather and Rain Event Tracking

Storm water sampling and visual observations will be conducted during Qualified Storm Events (QSEs). A QSE is defined as any precipitation event that produces a discharge for at least one drainage area and is preceded by 48 hours with no discharge from any drainage area. Weather and precipitation forecasts will be tracked to identify potential QSEs.

When targeting a QSE for Storm water sampling, the appropriate team member will weekly consult the National Oceanographic and Atmospheric Administration (NOAA) for weather forecasts. These forecasts can be obtained at http://www.srh.noaa.gov/. If weekly forecasts indicate potential for significant precipitation, the weather forecast will be closely monitored during the 48 hours preceding the event. Weather reports with precipitation data should be printed and maintained with the SWPPP in MIP Attachment 1 "Weather Reports" to document precipitation totals and antecedent conditions.

5.3 Monitoring Locations

Monitoring locations are shown on the Site Map(s) in Appendix A. Monitoring locations are described in Section 5.6.

Whenever changes in facility operations might affect the appropriateness of sampling locations, the sampling locations will be revised accordingly. All such revisions will be implemented as soon as feasible and the SWPPP amended.

5.4 Sample Collection and Visual Observation Exceptions

Safety practices for sample collection will be in accordance with the Facility's Health and Safety Plan, MSHA Part 56. A list (not inclusive) of the safety requirements that apply to sampling personnel is provided below:

- Gloves are to be worn at all times when taking or handling samples.
- Protective glasses shall be worn at all times when taking or handling samples.
- Appropriate footwear shall be worn at all times.
- Proper Plant/Facility PPE.

The collection of samples or conduct visual observations is not required under the following conditions:

- During dangerous weather conditions such as flooding and electrical storms.
- Outside of scheduled site business hours. If the Facility is closed during normal business hours due to closure, inclement weather or holidays a statement will be provided and additional information can be provided upon request.

Permitted Site hours are presented in Section 2.2.

If monitoring (visual observations or sample collection) of the site is unsafe because of the dangerous conditions noted above then the appropriate team member will document the conditions for why an exception to performing the monitoring was necessary. The exception documentation will be filed in MIP Attachment 2 "Monitoring Records".

5.5 Visual Observation Procedures

Visual monitoring includes observations of drainage areas, BMPs, and discharge locations.

- Observations of BMPs are required to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended.
- Observations of the drainage areas are required to identify any spills, leaks, uncontrolled pollutant sources, and non-Storm water discharges.
- Observations of discharge locations are required to identify the presence of visible pollutants in Storm water discharged from the facility.

Visual observations will be performed at least once every calendar month during dry conditions. Visual observations will also be performed during Storm water sampling events when discharge is occurring.

5.5.1 Monthly Visual Observations

Monthly visual observations are necessary to document the presence of and to identify the source of any pollutants and non-Storm water flows. These should consist of observations of the outdoor facility operations, BMPs, and NSWD observations.

In the event that monthly visual observations are not performed, an explanation must be provided in the annual report.

5.5.1.1 Outdoor Facility Operations Observations

Observe potential sources of industrial pollutants including industrial equipment and storage areas, and outdoor industrial activities. Record observations of:

- Spills or leaks; and
- Uncontrolled pollutant sources

5.5.1.2 BMP Observations

Observe BMPs to identify and record:

- BMPs that are properly implemented;
- BMPs that need maintenance to operate effectively;
- BMPs that have failed; or
- BMPs that could fail to operate as intended.

5.5.1.3 Non-Storm water Discharge Observations

Observe each drainage area for the presence of or indications of prior unauthorized and authorized non-Storm water discharges. Record:

- Presence or evidence of any non-Storm water discharge (authorized or unauthorized);
- Pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.); and
- Source of discharge.

For authorized non-Storm water discharges, also document whether BMPs are in place and are functioning to prevent contact with materials or equipment that could introduce pollutants

5.5.2 Sampling Event Visual Observations

Sampling event visual observations evaluate the general appearance of the Storm water as an indicator of potential pollutants. These observations will be conducted at the same time sampling occurs at the discharge locations identified in Section 5.6.2. At each discharge location where a sample is obtained, record observations of:

- *F*loating and suspended materials;
- Oil and grease;
- Discoloration;
- Turbidity;
- Odors; and
- Trash.

When pollutants are observed in the discharged Storm water, follow-up observations of the drainage area will be conducted to identify the probable source of the pollutants.

In the event that a discharge location is not visually observed during the sampling event, the location of the discharge and reasoning for not obtaining observations must be recorded.

5.5.3 Visual Monitoring Procedures

Visual monitoring will be conducted by trained team members. The name(s) and contact number(s) of the site visual monitoring personnel are listed below and their training qualifications are provided in Appendix C.

- Assigned inspector: Daryl Pernu Contact phone: (559)793-0903
- Alternate inspector: Adam Plunk Contact phone: (559)793-0903

Visual observations will be documented on the *Visual Observation Log* (see MIP Attachment 3 "Example Forms"). Visual observations will be supplemented with a site specific BMP inspection checklist. Photographs used to document observations will be referenced on the *Visual Observation Log* and maintained with the Monitoring Records in Attachment 2.

The completed logs and checklists will be kept in MIP Attachment 2 "Monitoring Records".

5.5.4 Visual Monitoring Follow-Up and Reporting

Correction of deficiencies identified by the observations, including required repairs or maintenance of BMPs, will be initiated and completed as soon as possible. Response actions will include the following:

- Report observations to the Pollution Prevention Team Leader or designated individual;
- Identify and implement appropriate response actions;
- Determine if SWPPP update is needed;
- Verify completion of response actions; and
- Document response actions.

If identified deficiencies require design changes, including additional BMPs, the implementation of changes will be completed as soon as possible, and the SWPPP will be amended to reflect the changes.

BMP deficiencies identified in site observation reports and correction of deficiencies will be tracked on the *BMP Observation Checklist* and will be retained in Appendix I.

Results of visual monitoring must be summarized and reported in the Annual Report.

5.5.5 Visual Monitoring Locations

The observations identified in Sections 5.5.1 and 5.5.2 will be conducted at the locations identified in this section.

Visual monitoring locations are shown on the Site Map(s) in SWPPP Appendix A.

There are 4 drainage area(s) onsite. Drainage area(s) are shown on the Site Map(s) in Appendix A and are identified in Table 5.1.

Table 5-1. Facility Drainage Areas

Facility Drainage Areas	
Location Identifier	Drainage Area Name
1	West Acreage
2	Central Acreage
3	East Acreage
4	South Acreage

There are 2 discharge location(s) onsite. Site Storm water discharge location(s) are shown on the Site Map(s) in Appendix A and Table 5.2 identifies each Storm water discharge location.

Table 5-2. Storm water Discharge Locations

Storm water Discharge Locations	
Location Identifier	Discharge Location (Note Drainage Area that the discharge location drains)
1	Main driveway off of Avenue 120, Drains to Deer Creek
2	Gravel road NW of Central Drainage area, Drains to Deer Creek

There are 2 potential Storm water storage or containment area(s) onsite. Storm water storage or containment area(s) are shown on the Site Map(s) in Appendix A and Table 5.3 identifies each Storm water storage or containment area by location.

Table 5-3. Storm water Storage and Containment Areas

Storm water Storage and Containment Areas	
Location Identifier	Description of Containment (Note Drainage Area in which the containment is located)
1	Central pond (for storm water retention only)
2	3 South ponds

5.6 Sampling and Analysis Procedures

This section describes the methods and procedures that will be followed for Storm water sampling and analysis. It contains information for sampling schedule, sampling locations, monitoring preparation, analytical constituents, sample collection, sample analysis, and data evaluation and reporting.

5.6.1 Sampling Schedule

Storm water samples at each discharge location will be collected and analyzed from two (2) QSEs within the first half of each reporting year (July 1 to December 31), and two (2) QSEs within the second half of each reporting year (January 1 to June 30).

A QSE is a precipitation event that:

- *Produces a discharge for at least one drainage area; and*

- *Is preceded by 48 hours with no discharge from any drainage area.*

5.6.2 Sampling Locations

Sampling locations include all locations where Storm water is discharged from the site. Discharge locations are shown on the Site Map(s) in Appendix A and are included in Table 5.4.

A total of 2 discharge location(s) have been identified on the project site for the collection of Storm water runoff samples.

Table 5-4. Sample Locations

Sample Locations		
Sample Location Number	**Sample Location Description**	**Sample Location Latitude and Longitude** (Decimal Degrees)
1	Main Driveway	36.00772, -118.95253
2	Gravel road, NW corner of Central Acreage	36.00675, -118.95528

5.6.3 Monitoring Preparation

Samples on the project site will be collected by the following sampling personnel:

Name/Telephone Number: Daryl Pernu – (559) 793-0903

Alternate(s)/Telephone Number: Adam Plunk – (559) 793-0903

An adequate stock of monitoring supplies and equipment for sampling will be available onsite prior to a sampling event. Monitoring supplies and equipment will be stored in a cool temperature environment that will not come into contact with rain or direct sunlight. Sampling personnel will be available to collect samples in accordance with the sampling schedule. Supplies maintained at the facility will include, but are not limited to: clean powder-free nitrile gloves; sample collection equipment; coolers; appropriate number and volume of sample containers; identification labels; re-sealable storage bags; paper towels; personal rain gear; ice; and *Sampling Field Log Sheets* and Chain of Custody (CoC) forms, which are provided in MIP Attachment 3 "Example Forms".

5.6.4 Analytical Constituents

Table 5.5 identifies the constituents identified for sampling and analysis.

Table 5-5. Analytical Constituents

Analytical Constituents	
Constituent	**Reason**
pH	Basic required constituent
Oil and grease	Basic required constituent
Total Suspended Solids	Basic required constituent

5.6.5 Sample Collection

Samples of discharge will be collected at the designated sampling locations shown on the Site Map(s) in Appendix A. Samples from each discharge location will be collected within four (4) hours of:

- The start of the discharge; or
- The start of facility operations if the QSE occurs within the previous 12 hour period.

Sample collection is required during scheduled facility operating hours and when sampling conditions are safe.

Grab samples will be collected and preserved in accordance with the methods identified in Table 5.6, "Sample Collection, Preservation and Analysis for Water Quality Samples" provided in Section 5.6.6. Only team members properly trained in water quality sampling will collect samples.

The facility is subject to Subchapter N ELGs mandating pH analysis and has not entered Level 1 Status for pH. Grab samples will be collected and analyzed for pH using 8-16 oz vessel and a Hanna Combo Multimeter (HI98129) or approved equivalent. The Hanna Combo uses a 2 point calibration system, requiring either 7.00 and 4.00 or 7.00 and 10.00 pH standards. Copies of field meter instructions/information will be filed in MIP Attachment 4 "Field Meter Instructions". Field personnel will calibrate monitoring equipment to manufacturers specifications prior to sampling discharge. The pH analysis will be performed as soon as practicable, but no later than 15 minutes after sample collection.

Samples from different discharge locations will not be combined or composited prior to shipment to the analytical laboratory. Sample collection and handling requirements are described in Section 5.8.

5.6.6 Sample Analysis

Samples will be analyzed using the analytical methods identified in the Table 5.6.

Samples will be analyzed by:

Laboratory Name:	Fruit Growers Laboratory (FGL)
Street Address:	9415W Goshen Avenue
City, State Zip:	Visalia, CA 93291
Telephone Number:	(559)734-9473
Point of Contact:	Neal Jessup
ELAP Certification Number:	Visalia Lab – 2810; Santa Paula Lab (primary facility) – 1573

Samples will be delivered to the laboratory by:

Facility Personnel	☒ Yes	☐ No
Picked up by Laboratory Courier	☒ Yes	☐ No
Shipped	☐ Yes	☒ No

Table 5-6. Sample Collection, Preservation and Analysis for Water Quality Samples

Sample Collection, Preservation and Analysis for Water Quality Samples						
Constituent	Analytical Method	Minimum Sample Volume	Sample Containers	Sample Preservation	Reporting Limit	Maximum Holding Time
pH	SM4500- H B	250ml	Plastic	None		*
TSS	SM2540D	1 L	Plastic	None		7 Days
O&G	EPA 1664A	1 qt	Glass	4 ml 1+1 H2SO4		28 Days
Notes:						
pH will be tested in the field within 15 min of time of sample.						

5.6.7 Data Evaluation and Reporting

The designated member of the Pollution Prevention Team will complete an evaluation of the water quality sample analytical results.

All sampling and analytical results for all individual samples will be submitted via SMARTS within 30 days of obtaining all results for each sampling event.

The method detection limit will be provided when an analytical result from samples taken is reported by the laboratory as a "non-detect" or less than the method detection limit. A value of zero will not be reported. Analytical results that are reported by the laboratory as below the minimum level (often referred to as the reporting limit) but above the method detection limit will be provided.

Reported analytical results will be averaged automatically by SMARTS at the end of the reporting year. For any calculations required by the General Permit a value of zero shall be used, all effluent sampling analytical results that are reported by the laboratory as "non-detect" or less than the Method Detection Limit (MDL).

5.7 Training of Sampling Personnel

Sampling personnel will be trained to collect, maintain, and ship samples in accordance with the General Permit and this SWPPP. Training records of designated sampling personnel are provided in Appendix C.

The Storm water sampler(s) and alternate(s) have received the following Storm water sampling training:

Table 5-7. Storm water Sampling Training

Storm water Sampling Training	
Name	Training
TBD	TBD
TBD	TBD

The Storm water sampler(s) and alternates have the following Storm water sampling experience:

Storm water Sampling Experience	
Name	Experience
TBD	TBD
TBD	TBD

5.8 Sample Collection and Handling

5.8.1 Sample Collection

Samples will be collected at the designated sampling locations shown on the Site Map(s) and listed in the preceding sections. Samples will be collected, maintained and shipped in accordance with the requirements in the following sections.

Grab samples will be collected and preserved in accordance with the methods identified in preceding sections.

To maintain sample integrity and prevent cross-contamination, sample collection personnel will follow the protocols below.

- Collect samples (for laboratory analysis) only in analytical laboratory-provided sample containers;
- Wear clean, powder-free nitrile gloves when collecting samples;
- Change gloves whenever something not known to be clean has been touched;
- Change gloves between sites;
- Decontaminate all equipment (e.g. bucket, tubing) prior to sample collection using a trisodium phosphate water wash, distilled water rinse, and final rinse with distilled water. (Dispose of wash and rinse water appropriately, i.e., do not discharge to storm drain or receiving water). Do not decontaminate laboratory provided sample containers;
- Do not smoke during sampling events;
- Never sample near a running vehicle;
- Do not park vehicles in the immediate sample collection area (even non-running vehicles);
- Do not eat or drink during sample collection; and
- Do not breathe, sneeze, or cough in the direction of an open sample container.

The most important aspect of grab sampling is to collect a sample that represents the entire runoff stream. Typically, samples are collected by dipping the collection container in the runoff flow paths and streams as noted below.

- For small streams and flow paths, simply dip the bottle facing upstream until full.
- For larger stream that can be safely accessed, collect a sample in the middle of the flow stream by directly dipping the mouth of the bottle. Once again making sure that the opening of the bottle is facing upstream as to avoid any contamination by the sampler.
- For larger streams that cannot be safely waded, pole-samplers may be needed to safely access the representative flow.
- Avoid collecting samples from ponded, sluggish or stagnant water.
- Avoid collecting samples directly downstream from a bridge as the samples can be affected by the bridge structure or runoff from the road surface.
- Do not stand upstream of the sampling point within the flow path.

Note, that depending upon the specific analytical test, some containers may contain preservatives. These containers should **never** be dipped into the stream, but filled indirectly from the collection container.

5.8.1.1 5.8.2 Sample Handling

Field pH measurements must be conducted immediately. Do not store pH samples for later measurement. Samples for laboratory analysis must be handled as follows. Immediately following sample collection:

- Cap sample containers;

- Complete sample container labels;
- Sealed containers in a re-sealable storage bag;
- Place sample containers into an ice-chilled cooler;
- Document sample information on the Sampling Field Log Sheet; and
- Complete the CoC.

All samples for laboratory analysis must be maintained between 0-6 degrees Celsius during delivery to the laboratory. Samples must be kept on ice, or refrigerated, from sample collection through delivery to the laboratory. Place samples to be shipped inside coolers with ice. Make sure the sample bottles are well packaged to prevent breakage and secure cooler lids with packaging tape.

Ship samples that will be laboratory analyzed to the analytical laboratory right away. Hold times are measured from the time the sample is collected to the time the sample is analyzed. The General Permit requires that samples be received by the analytical laboratory within 48 hours of the physical sampling (unless required sooner by the analytical laboratory).

5.8.2 Sample Documentation Procedures

All original data documented on sample bottle identification labels, *Sampling Log*, and CoCs will be recorded using waterproof ink. If an error is made on a document, sampling personnel will make corrections by lining through the error and entering the correct information. The erroneous information will not be obliterated. All corrections will be initialed and dated.

Duplicate samples will be identified consistent with the numbering system for other samples to prevent the laboratory from identifying duplicate samples. Duplicate samples will be identified in the Sampling Log. Sample documentation procedures include the following:

Sample Bottle Identification Labels: Sampling personnel will attach an identification label to each sample bottle. Sample identification will uniquely identify each sample location.

Field Log Sheets: Sampling personnel will complete the *Effluent Sampling Field Log Sheet* and *Receiving Water Sampling Field Log Sheet* for each sampling event, as appropriate.

Chain of Custody: Sampling personnel will complete the CoC for each sampling event for which samples are collected for laboratory analysis. The sampler will sign the CoC when the sample(s) is turned over to the testing laboratory or courier.

5.9 Quality Assurance and Quality Control

An effective Quality Assurance and Quality Control (QA/QC) plan will be implemented as part of the IMP to ensure that analytical data can be used with confidence. QA/QC procedures to be initiated include the following:

- Field logs;
- Clean sampling techniques;
- CoCs;
- QA/QC Samples; and

- Data verification.

Each of these procedures is discussed in more detail in the following sections.

5.9.1 Field Logs

The purpose of field logs is to record sampling information and field observations during monitoring that may explain any uncharacteristic analytical results. Sampling information to be included in the field log include the date and time of water quality sample collection, sampling personnel, sample container identification numbers, and types of samples that were collected. Field observations should be noted in the field log for any abnormalities at the sampling location (color, odor, BMPs, etc.). Field measurements for pH and turbidity should also be recorded in the field log. A Visual Inspection Field Log and an Effluent Sampling Field Log Sheet are included in MIP Attachment 3 "Example Forms".

5.9.2 Clean Sampling Techniques

Clean sampling techniques involve the use of certified clean containers for sample collection and clean powder-free nitrile gloves during sample collection and handling. As discussed in Section 6.8, adoption of a clean sampling approach will minimize the chance of field contamination and questionable data results.

5.9.3 Chain of Custody

The sample CoC is an important documentation step that tracks samples from collection through analysis to ensure the validity of the sample. Sample CoC procedures include the following:

- Proper labeling of samples;
- Use of CoC forms for all samples; and
- Prompt sample delivery to the analytical laboratory.

Analytical laboratories usually provide CoC forms to be filled out for sample containers. An example CoC is included in MIP Attachment 3 "Example Forms".

5.9.4 QA/QC Samples

QA/QC samples provide an indication of the accuracy and precision of the sample collection; sample handling; field measurements; and analytical laboratory methods. The following types of QA/QC will be conducted for this project:

☒ Field Duplicates at a frequency of 1 duplicate per sampling event.
(Required for all sampling plans with field measurements or laboratory analysis)

☐ Equipment Blanks at a frequency of 1 duplicate per sampling event.
(Only needed if equipment used to collect samples could add the pollutants to sample)

☒ Field Blanks at a frequency of 1 duplicate per sampling event as required by 5.9.4.3.
(Only required if sampling method calls for field blanks)

☒ Travel Blanks at a frequency of 1 duplicate per sampling event as required by 5.9.4.4.
(Required for sampling plans that include VOC laboratory analysis)

5.9.4.1 Field Duplicates

Field duplicates provide verification of laboratory or field analysis and sample collection. Duplicate samples will be collected, handled, and analyzed using the same protocols as primary samples. The sample location where field duplicates are collected will be randomly selected from the discharge locations. Duplicate samples will be collected immediately after the primary sample has been collected. Duplicate samples must be collected in the same manner and as close in time as possible to the original sample. Duplicate samples will not influence any evaluations or conclusion.

5.9.4.2 Equipment Blanks

Equipment blanks provide verification that equipment has not introduced a pollutant into the sample. Equipment blanks are typically collected when:

- New equipment is used;
- Equipment that has been cleaned after use at a contaminated site;
- Equipment that is not dedicated for surface water sampling is used; or
- Whenever a new lot of filters is used when sampling metals.

5.9.4.3 Field Blanks

Field blanks assess potential sample contamination levels that occur during field sampling activities. De-ionized water field blanks are taken to the field, transferred to the appropriate container, and treated the same as the corresponding sample type during the course of a sampling event.

5.9.4.4 Travel Blanks

Travel blanks assess the potential for cross-contamination of volatile constituents between sample containers during shipment from the field to the laboratory. De-ionized water blanks are taken along for the trip and held unopened in the same cooler with the VOC samples.

5.9.5 Data Verification

After results are received from the analytical laboratory, the discharger will verify the data to ensure that it is complete, accurate, and the appropriate QA/QC requirements were met. Data must be verified as soon as the data reports are received. Data verification will include:

- Check the CoC and laboratory reports. Make sure all requested analyses were performed and all samples are accounted for in the reports.
- Check laboratory reports to make sure hold times were met and that the reporting levels meet or are lower than the reporting levels agreed to in the contract.
- Check data for outlier values and follow up with the laboratory. Occasionally typographical errors, unit reporting errors, or incomplete results are reported and should be easily detected. These errors need to be identified, clarified, and corrected quickly by the laboratory. Especially note data that is an order of magnitude or more different than similar locations, or is inconsistent with previous data from the same location.
- Check laboratory QA/QC results. EPA establishes QA/QC checks and acceptable criteria for laboratory analyses. These data are typically reported along with the sample results. Evaluate the reported QA/QC data to check for contamination (method, field, and equipment blanks), precision (laboratory matrix spike duplicates), and accuracy (matrix spikes and laboratory control samples).

When QA/QC checks are outside acceptable ranges, the laboratory must flag the data, and usually provides an explanation of the potential impact to the sample results.

- Check the data set for outlier values and accordingly, confirm results and re-analyze samples where appropriate. Sample re-analysis should only be undertaken when it appears that some part of the QA/QC resulted in a value out of the accepted range. Sample results may not be discounted unless the analytical laboratory identifies the required QA/QC criteria were not met and confirms this in writing.

Field data including pH measurements and visual observations must be verified as soon as the Visual Observation and Sampling Logs are received, typically at the end of the monitoring event. Field data verification will include:

- Check logs to make sure all required measurements were completed and appropriately documented;
- Check reported values that appear out of the typical range or inconsistent;
  Follow-up immediately to identify potential reporting or equipment problems, if appropriate, recalibrate equipment after sampling;
- Verify equipment calibrations;
- Review observations noted on the logs; and
- Review notations of any errors and actions taken to correct the equipment or recording errors.

5.10 Records Retention

Records of Storm water monitoring information and copies of reports (including Annual Reports) must be retained for a period of at least five (5) years from date of submittal or longer if required by the Regional Water Board.

Results of visual observations, field measurements, and laboratory analyses must be kept in the SWPPP along with CoCs, and other documentation related to the monitoring.

Records to be retained include:

- The date, place, and time of inspections, sampling, visual observations, and/or measurements, including precipitation;
- The individual(s) who performed the inspections, sampling, visual observation, and/or field measurements;
- The date and approximate time of field measurements and laboratory analyses;
- The individual(s) who performed the laboratory analyses;
- A summary of all analytical results, the method detection limits and reporting limits, and the analytical techniques or methods used;
- Weather reports;
- QA/QC records and results;
- Calibration records;
- Visual observation and sample collection exception records; and

- The records of any corrective actions and follow-up activities that resulted from analytical results, visual observations, or inspections.

MIP Attachment 1: Weather Reports

MIP Attachment 2: Monitoring Records

MIP Attachment 3: Example Forms

STORMWATER OBSERVATION REPORT

Owner/Builder: Jaxon Enterprises

Facilty Name **DEER CREEK ASPHALT**

Site Location: 27671 Avenue 120, Road 272, Porterville, CA

Inspector Title: _____

Inspector Name: _____

Inspection Date: ___/___/___ Time: ___:___ ☐AM ☐PM

If Storm Event:

Start time: ___:___ ☐AM ☐PM

Duration: _____

Appx. Rain Fall: _____ inches

Date Last Event: ___/___/___

☐ **No significant rain event occurred.**

Check a Weather Condition: ☐Clear & Sunny ☐Partly Cloudy ☐Overcast ☐Storming ☐Foggy

Reporting: ☐Pre-Storm ☐Storm Event ☐Post Storm ☐Quarterly ☐Weekly ☐Final

SWPPP Best Management Practices (BMP)'s	YES	NO	N/A	Inspection Corrective Measures	Date of Correction
1. BMP's implemented are consisitent with SWPPP.					
2. Are additional BMP's controls needed.					
3. Current jobsite BMP's are shown on WPCD/Site Map					
Erosion/Sediment Control BMP's	**YES**	**NO**	**N/A**	**Maintenance Required**	**Date of Correction**
4. Exits/Entrances are stabilized to prevent trackout.					
5. Public roads directly connect to facility are free of excessive sediment/debris/mud from the site.					
6. Permanent Structural controls are in good repair.					
7. Temporary Structural controls are in good repair (berms, wattles, silt fencing, etc.)					
8. Stockpiles are properly maintained/located.					
9. New sediment filters required.					
10. Is there any site related excess sediment/other pollutant(s) leaving the site? (relavant outfalls, discharge points, etc)					
11. Was it necessary to do any sampling at identified sampling locations?					
12. Was sampling information recorded in the Sampling Log?					
13. Any visible pollutant characteristics (floating & suspended material, sheen, discoloration, turbidity, odor, etc.					
Above Ground Petroleum Storage Monitoring	**YES**	**NO**	**N/A**	**Description**	**Date of Correction**
14. Are any of the above ground storage tanks leaking?					
15. Is there sufficient containment under the tanks?					
16. Is there storm water runoff from any of the containment areas?					

Site Maintenance	YES	NO	N/A	Description	Date of Correction
17. Regular Site Maintenance Scheduled.					
18. Additional Cleanup Needed?					
19. Hazardous Material bins (washouts) are properly on streets & gutters within the Site.					
20. Excess sediment is being handled properly on streets & gutters within the Site.					
21. Waste trash, debris & litter controls are present (incl. portables, batteries, univeral waste).					
General	YES	NO	N/A	Description	Date of Correction
22. Is all necessary information provided on site (includes contact, permits, SWPPP binder)	X			At Job Trailer or in Plant Manager's office.	
23. Have there been any State/Federal inspections since last inspection.					
24. Were photographs taken during inspection?					
25. If any, were all corrective actions begun within 48 hrs? If not, please describe.					

Signature: _____ Date: _____

(Individual performing the inspection)

Note: the Qualified Site Person (QSP) Inspector only identifies BMP failures/adquacy. The Legally Responsible Person (LRP) shall have, as well as reserves, the primary responsibilty and significant authority for the implementation, maintenance, inspection and amendments to the approved SWPPP.

Attach weekly forecast to report.

Visual Observation Log – Sampling Events			
Date and Time of Inspection:		Report Date:	
Facility Name:			
Weather			
Antecedent Conditions (last 48 hours):		Weather:	
Precipitation Total:		Predicted % chance of rain:	
Estimate storm beginning: _____ (date and time)	Estimate storm duration:_____ (hours)	Estimate time since last storm: _____ (days or hours)	Rain gauge reading: _____ (inches)

Sampling Event Observations		
Observations: If yes identify location and observe drainage area to identify probable cause		
Odors	Yes ☐	No ☐
Floating material	Yes ☐	No ☐
Suspended Material	Yes ☐	No ☐
Sheen	Yes ☐	No ☐
Discolorations	Yes ☐	No ☐
Turbidity	Yes ☐	No ☐

NSWD Observations		
Were any authorized non-Storm water discharges observed?	Yes ☐	No ☐
Were any **unauthorized** non-Storm water discharges observed?	Yes ☐	No ☐
If yes to either, identify source		

Drainage Area Observations	
Drainage Area	Deficiencies Noted

Exception Documentation (explanation required if inspection could not be conducted).

Inspector Information	
Inspector Name:	Inspector Title:
Signature:	Date:

Sampling Log		
Facility Name:	Date:	Time Start:
Sampler Name:		

Field Meter Calibration
pH Meter ID No./Description: Calibration Date/Time:

Field pH Measurements		
Discharge Location Identifier	pH	Time

Samples Collected		
Discharge Location Identifier	Constituent	Time
	Oil and Grease	
	Total Suspended Solids	

Additional Sampling Notes:
Time End:

CHAIN-OF-CUSTODY **DATE:** **Lab ID:**

DESTINATION LAB:
ATTN:
ADDRESS:

Office Phone:
Cell Phone:

SAMPLED BY:
Contact:
Facility Name

REQUESTED ANALYSIS

Notes:

Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container #	Container Type	Container Pres.					

SENDER COMMENTS:

RELINQUISHED BY

Signature:
Print:
Company:
Date: TIME:

LABORATORY COMMENTS:

RECEIVED BY

Signature:
Print:
Company:
Date: TIME:

MIP Attachment 4: Field Meter Instructions

MIP Attachment 5: Other Regulatory Documents

6 References

State Water Resources Control Board (2014). Order 2014-0057-DWQ, NPDES General Permit No. CAS000001: National Pollutant Discharges Elimination System (NPDES) California General Permit for Storm Water Discharge Associated with Industrial Activities. Available on-line at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/industrial.shtml.

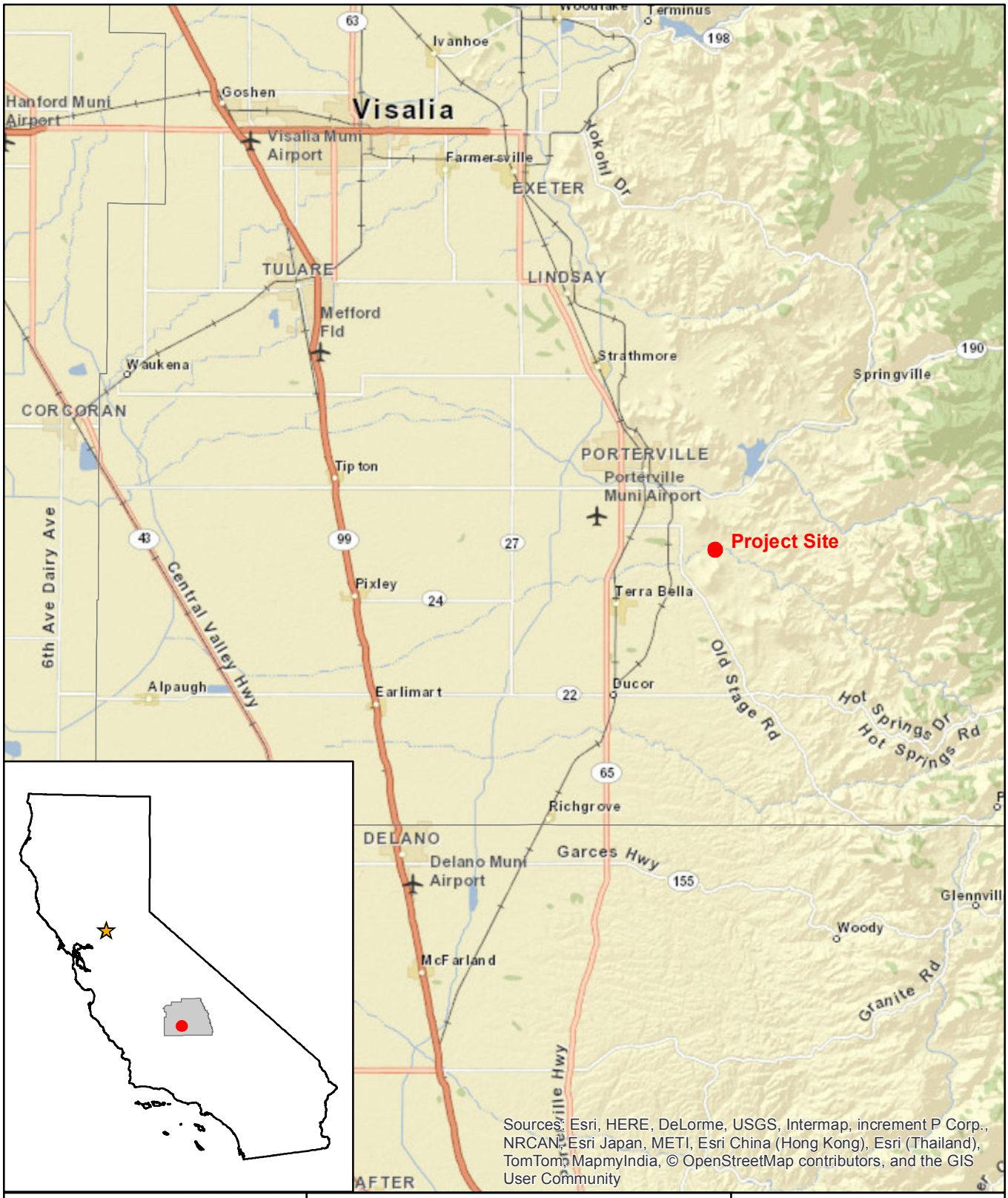
- Central Valley Regional Water Quality Control Board: Notice of Violation – March 11,2015
- Central Valley Regional Water Quality Control Board:
  Industrial Storm Water Inspection Report - February 9, 2015
- Storm Water Pollution Prevention Plan for Deer Creek Rock Co., Inc.

  August 2003 (Revised November 2006)
- Spill Prevention Control and Countermeasure Plan Deer Creek Asphalt

  June 22 2011 (revised February 2014)
- Jaxon Enterprises Deer Creek Asphalt Hazardous Materials Business Plan November 2007
- CASQA 2012, Storm water BMP Handbook Portal: Industrial Commercial, August 2014, www.casqa.org

Appendix A

Site Map(s)



0 4 8 Miles

1 inch = 40,000 feet

EST. 1968
PROVOST & PRITCHARD
CONSULTING GROUP
An Employee Owned Company

286 W Cromwell
Fresno, CA 93711
559-449-2700

Figure 1
Deer Creek Rock Co.
27671 Avenue 120
Porterville, CA

6/17/2015 G:\Deer Creek Rock Co-2439\243915C1-SWPPP\GIS\Map\Vicinity.mxd

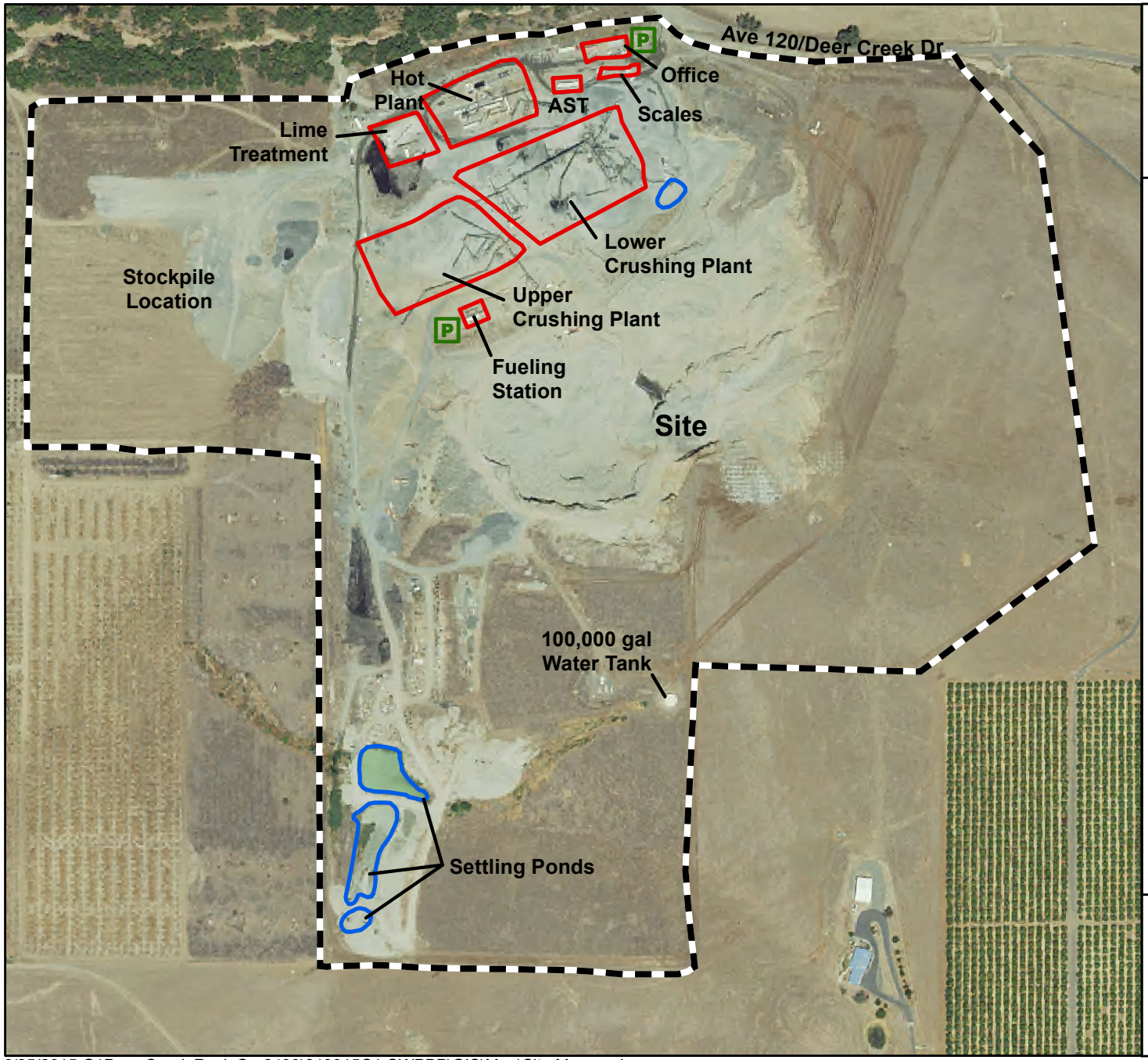


Figure 2

Deer Creek Rock Co

27671 Avenue 120
Porterville, CA

Site Map

Legend

- Earthen Berm/ Facility Boundary
- Retention Location/Pond
- Working areas
- Parking

**2014 NAIP Aerial Image*

0 200 400 Feet

1 inch = 400 feet

EST. 1968
PROVOST& PRITCHARD
CONSULTING GROUP
An Employee Owned Company
286 W. Cromwell
Fresno . CA . 93711
Tel(559) 449.2700

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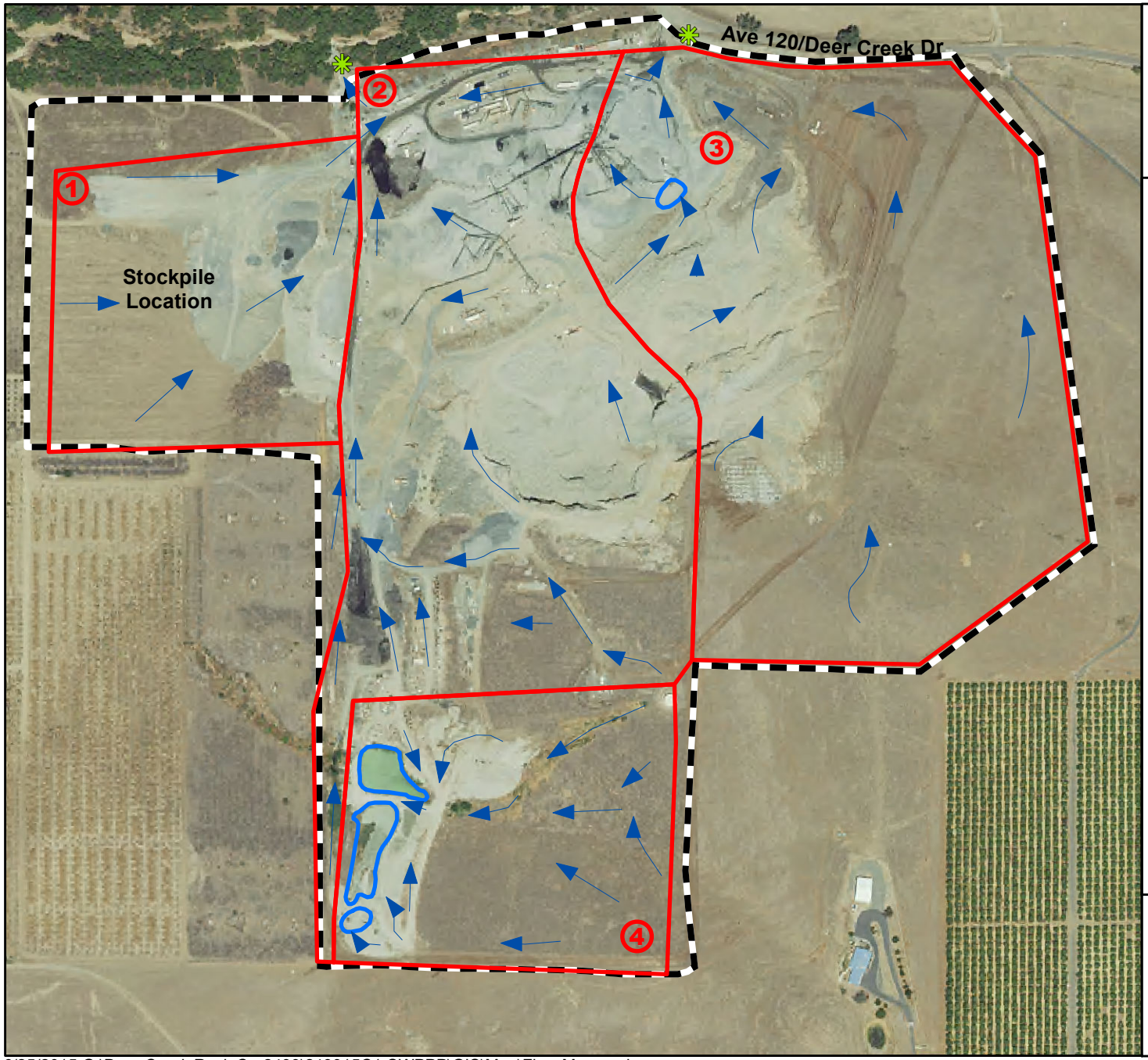

Figure 3

Deer Creek Rock Co

27671 Avenue 120
Porterville, CA

Site Flow Map

Legend

- Discharge Point
- Surface Flow Direction
- Drainage Areas
- Earthen Berm/ Facility Boundary
- Retention Location/Pond

**2014 NAIP Aerial Image*

Note: General drainage paths shown. As facility stockpile locations/sizes shift, paths may change. Overall site discharge points will not vary.

0 200 400 Feet

1 inch = 400 feet

EST. 1968
PROVOST& PRITCHARD
CONSULTING GROUP
An Employee Owned Company
286 W. Cromwell
Fresno . CA . 93711
Tel(559) 449.2700

6/25/2015 G:\Deer Creek Rock Co-2439\243915C1-SWPPP\GIS\Map\Flow Map.mxd

Appendix B

Permit Registration Documents

Permit Registration Documents included in this Appendix:

Y/N	Permit Registration Document
Y	Notice of Intent
Y	Certification
N	Copy of Annual Fee Receipt – Available by Owner upon request
Y	Site Map(s), see Appendix A

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

Approved Date: September 05, 2003

Wallace Baker
Jaxon Enterprises
PO Box 994248
Redding CA 96099

RECEIPT OF YOUR NOTICE OF INTENT (NOI)

The State Water Resources Control Board (State Water Board) has received and processed your NOI to comply with the terms of the General Permit to Discharger Storm Water Associated with Industrial Activity. Accordingly, you are required to comply with the permit requirements.

The Waste Discharger Identification (WDID) number is: **5F54I018329** . Please use this number in any future communication regarding this permit.

	FACILITY DESCRIPTION
OPERATOR:	Jaxon Enterprises
FACILITY INFORMATION:	Deer Creek Rock Co Inc 27671 Avenue 120 Porterville CA 93257
COUNTY:	Tulare
SIC/NAIC CODES:	2951

When the operator changes (i.e. the business was bought or transferred), a new NOI, site map, and fee must be submitted by the new operator. As the previous operator, you are required to submit a Notice of Termination (NOT) to the local Regional Water Board stating you no longer own or operate the facility and coverage under the General Permit is not required. Unless notified, you will continue and are responsible to pay the annual fee invoiced each July.

If you have any questions regarding permit requirements, please contact your Regional Water Board at 559-445-5116 . Please visit the storm water web site at http://www.waterboards.ca.gov/water_issues/programs/stormwater/ to obtain an NOT and other storm water related information and forms.

Sincerely,

Storm Water Section
Division of Water Quality

State Water Resources Control Board

NOTICE OF INTENT

GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH INDUSTRIAL ACTIVITIES (WQ ORDER No. 2014-0057-DWQ)
(Excluding Construction Activities)

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

WDID: 5F54I018329 **Status:** Active

Operator Information

Type: Private Business

Name: Jaxon Enterprises
Address: PO Box 994248
Address 2:
City/State/Zip: Redding CA 96099
Federal Tax ID: 94-2712903

Contact Name: Wallace Baker
Title: President
Phone #: 530-241-2112
Email: ddeldotto@wjbinc.net

Facility Information

Level:

Site Name: Deer Creek Rock Co Inc
Address: 27671 Avenue 120
City/State/Zip: Porterville CA 93257
County: Tulare
Latitude: 35.96619 Longitude: -118.86317
Total Site Size: 142 Acres
Industrial Area exposed to Storm Water: 70 Acres

Contact Name: Daryl Pernu
Title: Facility Manager
Site Phone #: 209-389-4795
Email: legrand@jaxonaggregates.com
Emergency:

Percent of Site Impervious (including rooftops): %

SIC Code(s)

Primary SIC: 2951 Asphalt Paving Mixtures and Blocks
Secondary SIC:
Tertiary SIC:

Additional Information

Receiving Water: Deer Creek
Storm drain system:
Compliance Group:
RWQCB Jurisdiction: Region 5F - Fresno
Phone: 559-445-5116

Water Flow: Indirectly
Email: r5f_stormwater@waterboards.ca.gov

Certification

Name Wallace Baker
Title: President

Date: February 04, 2015

Attachments Meta Data Information:

Attachment ID	File Name	File Description	File Hash	File Size	Date Attached	Attachment Type
429509	5F54I018329.pdf	SWARM Registration: Jerry M Cobb	eb37949c62dbeccb2dc1ae979b2b294c05bcaf32c68ecd5a66116d981cac19	61858	2008-11-14 12:27:21.0	Binary Large Object

DCA

Water Boards Storm Water Multiple Application & Report Tracking System

Help Logout

Navigate To:

You are logged-in as: **Wallace Baker - .**
If this account does not belong to you, please log out.

Recertify Acknowledgement

The Notice of Intent for Order 2014-0057-DWQ; WDID No. 5F54I018329 was successfully submitted.

To complete recertification under the new Industrial General Permit Order 2014-0057-DWQ and continue your permit coverage, please upload your revised Storm Water Pollution Prevention Plan (SWPPP) and facility site map before July 1, 2015.

Failure to upload a revised SWPPP in accordance with the Industrial General Permit Order 2014-0057-DWQ by July 1, 2015, may result in penalties up to $10,000 for each day of violation per Water Code 13385.

Please print the eAuthorization Form for the organization and mail the original signed copy to the Water Boards.

Print E Authorization Form

Certify Another WDID | Upload SWPPP | Upload SWPPP Later

Appendix C

Training Reporting Form

Trained Team Member Log

Storm water Management Training Log and Documentation

Facility Name: _____

WDID# : _____

Storm water Management Topic: (check as appropriate)

- ☐ Good Housekeeping
- ☐ Spill and Leak Prevention and Response
- ☐ Erosion and Sediment Controls
- ☐ Advanced BMPs
- ☐ Storm water Sampling and Analysis
- ☐ Preventative Maintenance
- ☐ Material Handling and Waste Management
- ☐ Quality Assurance and Record Keeping
- ☐ Visual Monitoring

Specific Training Objective: _____

Location: _____ Date: _____

Instructor: _____ Telephone: _____

Course Length (hours): _____

Attendee Roster (Attach additional forms if necessary)		
Name	**Company**	**Phone**

As needed, add proof of external training (e.g., course completion certificates, credentials for QISP).

Appendix D

Responsible Parties

Authorization of Duly Authorized Representatives
Facility Name: Deer Creek Rock Company, Inc.

WDID #: WF54I018329

Name of Personnel	Project Role	Company	Signature	Date
Leonard Bandell	Duly Auth. Rep.	Jaxon Ent.		6/29/2015
Rhonda Nunnelley	Duly Auth. Rep.	Jaxon Ent.		5/26/15
Kim Enderson	Duly Auth. Rep.	Jaxon Ent.		6/29/15

LRP's Signature

6/29/15
Date

President
LRP Name and Title

(530) 241-2112
Telephone

Identification of QISP

Facility Name: _____

WDID #: _____

The following are QISPs associated with this project

Name of Personnel(1)	Company	Date

(1) If additional QISPs are required, add additional lines and include information here

Appendix E

SWPPP Amendment Certifications

SWPPP Amendment No. _____

Project Name: _____

Project Number: _____

Legally Responsible Person's Certification of the Storm water Pollution Prevention Plan Amendment

"This Storm water Pollution Prevention Plan and attachments were prepared under my direction to meet the requirements of the California Industrial General Permit (SWRCB Order No. 2014-0057-DWQ)."

LRP's Signature	Date
LRP Name	LRP Title
Title and Affiliation	Telephone
Address	Email

Appendix F

Calculations

(no calculations provided at this time)

Appendix G

CASQA Storm water BMP Handbook Portal: Industrial and Commercial Fact Sheets

Appendix H

BMP Implementation Log

BMP Implementation Log				
Industrial Activity/Material and Location	BMP Description	Implementation Frequency	Implementation Description or Fact Sheet Reference	Person Responsible for Implementing BMP

Appendix I

BMP Observation Forms

Monthly BMP Inspection Report	
Date and Time of Inspection:	Date Report Written:

Part I. General Information

Site Information			
Facility Name:			
Facility Address:			
Photos Taken: (Circle one)	Yes	No	Photo Reference IDs:

Weather	
Estimate storm beginning: (date and time)	Estimate storm duration: (hours)
Estimate time since last runoff from any drainage area: (days or hours)	Rain gauge reading and location: (in)
Is a "Qualifying Storm Event" predicted or did one occur (i.e., discharge from site preceded by 48-hrs without discharge)? (Y/N) If yes, summarize forecast:	

Exception Documentation (explanation required if inspection could not be conducted).

Inspector Information	
Inspector Name:	Inspector Title:
Signature:	Date:

Part II. BMP Observations. Describe deficiencies in Part III.

Minimum BMPs (List and Inspect all BMPs Implemented)	Failures or other Deficiencies (yes, no, N/A)	Action Required (yes/no)	Action Implemented (Date)
Good Housekeeping			

Preventative Maintenance			
Spill and Leak Prevention and Response			
Materials Handling and Waste Management			
Erosion and Sediment Controls			

Part II. BMP Observations Continued. Describe deficiencies in Part III.			
Advanced BMPs (List and Inspect all BMPs Implemented)	Adequately designed, implemented and effective (yes, no, N/A)	Action Required (yes/no)	Action Implemented (Date)
Exposure Minimization BMPs			

Storm water Containment and Discharge Reduction BMPs			
Treatment Control BMPs			
Other Advanced BMPs			

Part III. Descriptions of BMP Deficiencies		
Deficiency	**Repairs Implemented:** **Note -** Repairs must be completed as soon as possible.	
	Repaired (Y/N)	**Corrective Action Implemented**
1.		
2.		
3.		
4.		

Part IV. Additional Corrective Actions Required. Identify additional corrective actions not included with BMP Deficiencies (Part III) above. Identify BMPs that need more frequent inspection. Note if SWPPP change is required.	
Required Actions	**Implementation Date**

STORMWATER OBSERVATION REPORT

Owner/Builder: Jaxon Enterprises

Facilty Name **DEER CREEK ASPHALT**

Site Location: 27671 Avenue 120, Road 272, Porterville, CA

Inspector Title: _____

Inspector Name: _____

Inspection Date: ___/___/___ Time: ___:___ ☐AM ☐PM

If Storm Event:

Start time: ___:___ ☐AM ☐PM

Duration: _____

Appx. Rain Fall: _____ inches

Date Last Event: ___/___/___

☐ **No significant rain event occurred.**

Check a Weather Condition: ☐Clear & Sunny ☐Partly Cloudy ☐Overcast ☐Storming ☐Foggy

Reporting: ☐Pre-Storm ☐Storm Event ☐Post Storm ☐Quarterly ☐Weekly ☐Final

SWPPP Best Management Practices (BMP)'s	YES	NO	N/A	Inspection Corrective Measures	Date of Correction
1. BMP's implemented are consisitent with SWPPP.					
2. Are additional BMP's controls needed.					
3. Current jobsite BMP's are shown on WPCD/Site Map					
Erosion/Sediment Control BMP's	**YES**	**NO**	**N/A**	**Maintenance Required**	**Date of Correction**
4. Exits/Entrances are stabilized to prevent trackout.					
5. Public roads directly connect to facility are free of excessive sediment/debris/mud from the site.					
6. Permanent Structural controls are in good repair.					
7. Temporary Structural controls are in good repair (berms, wattles, silt fencing, etc.)					
8. Stockpiles are properly maintained/located.					
9. New sediment filters required.					
10. Is there any site related excess sediment/other pollutant(s) leaving the site? (relavant outfalls, discharge points, etc)					
11. Was it necessary to do any sampling at identified sampling locations?					
12. Was sampling information recorded in the Sampling Log?					
13. Any visible pollutant characteristics (floating & suspended material, sheen, discoloration, turbidity, odor, etc.					
Above Ground Petroleum Storage Monitoring	**YES**	**NO**	**N/A**	**Description**	**Date of Correction**
14. Are any of the above ground storage tanks leaking?					
15. Is there sufficient containment under the tanks?					
16. Is there storm water runoff from any of the containment areas?					

Site Maintenance	YES	NO	N/A	Description	Date of Correction
17. Regular Site Maintenance Scheduled.					
18. Additional Cleanup Needed?					
19. Hazardous Material bins (washouts) are properly on streets & gutters within the Site.					
20. Excess sediment is being handled properly on streets & gutters within the Site.					
21. Waste trash, debris & litter controls are present (incl. portables, batteries, univeral waste).					
General	YES	NO	N/A	Description	Date of Correction
22. Is all necessary information provided on site (includes contact, permits, SWPPP binder)	X			At Job Trailer or in Plant Manager's office.	
23. Have there been any State/Federal inspections since last inspection.					
24. Were photographs taken during inspection?					
25. If any, were all corrective actions begun within 48 hrs? If not, please describe.					

Signature: _____ Date: _____

(Individual performing the inspection)

Note: the Qualified Site Person (QSP) Inspector only identifies BMP failures/adquacy. The Legally Responsible Person (LRP) shall have, as well as reserves, the primary responsibilty and significant authority for the implementation, maintenance, inspection and amendments to the approved SWPPP.

Attach weekly forecast to report.

Visual Observation Log – Sampling Events	
Date and Time of Inspection:	Report Date:
Facility Name:	

Weather			
Antecedent Conditions (last 48 hours):		Weather:	
Precipitation Total:		Predicted % chance of rain:	
Estimate storm beginning: _____ (date and time)	Estimate storm duration:_____ (hours)	Estimate time since last storm: _____ (days or hours)	Rain gauge reading: _____ (inches)

Sampling Event Observations		
Observations: If yes identify location and observe drainage area to identify probable cause		
Odors	Yes ☐	No ☐
Floating material	Yes ☐	No ☐
Suspended Material	Yes ☐	No ☐
Sheen	Yes ☐	No ☐
Discolorations	Yes ☐	No ☐
Turbidity	Yes ☐	No ☐

NSWD Observations		
Were any authorized non-Storm water discharges observed?	Yes ☐	No ☐
Were any **unauthorized** non-Storm water discharges observed?	Yes ☐	No ☐
If yes to either, identify source		

Drainage Area Observations	
Drainage Area	Deficiencies Noted

Exception Documentation (explanation required if inspection could not be conducted).

Inspector Information	
Inspector Name:	Inspector Title:
Signature:	Date:

Appendix J

Industrial General Permit

January 25, 2018

Deer Creek Rock Co Inc.
27671 Avenue 120
Porterville, CA 93257

WDID No. 5F54I018329

Storm Water Pollution Prevention Plan (SWPPP) Amendment

This amendment serves in conjunction with the Level 1 Exceedance Response Action (ERA) Report for Deer Creek Rock Co Inc. in the 2016-2017 storm water reporting year. The following subsections function as additions to the SWPPP that accurately reflect changes implemented to the facility following Level 1 designation.

Table 5-2. Storm water Discharge Location

Location Identifier	Discharge Location (Note Drainage Area that the Discharge location drains)
2	Gravel road NW of Central Drainage area, Drains to Deer Creek (Completely bermed)

This discharge location is a bermed gravel pit. In the unlikely event that the bermed pit overflows due to a large storm event, samples will be taken.

Table 3-5. BMP Summary Table

Industrial Activity/Material	**Pollutant Sources**	**Potential Pollutants**	**BMPs Implemented**	**Required Equipment and Tools**
Crushing and Screening, Vehicle traffic, Aggregate Stockpiles	Loose/falling rocks, spills/leaks at tanks, vehicle and equipment traffic,	Dust, Sediments	Yes	Brooms, shovels, dust pans. Sweeping to be done on a weekly/as needed basis and prior to rain events. Mechanical sweeper will be used if feasible

SWPPP Revisions

Amendment No.	Date	Page and Section No.	Requested By	Brief Description of Amendment	Prepared/Approved by
1	01/25/2018	Section 3 Page 16 Section 5 Page 5	N/A	Updated SWPPP and Monitoring Implementation Plan to include improved and additional BMPs, per the Level 1 ERA report.	Frog Environmental

APPENDIX "F"

NOISE STUDY REPORT

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Deer Creek Rock Co., Inc. Expansion Project

Noise Study Report
April 2019

Prepared for:
Jaxon Enterprises
1643 Tahoe Court (96003)
P. O. Box 994248
Redding, CA 96099-4248

Prepared by:
VRPA Technologies, Inc.
4630 W. Jennifer, Suite 105
Fresno, CA 93722
Project Manager: Jason Ellard

Deer Creek Rock Co., Inc. Expansion Project
Noise Study Report

Study Team

- ✓ Georgiena Vivian, President, VRPA Technologies, Inc., gvivian@vrpatechnologies.com, (559) 259-9257
- ✓ Jason Ellard, Transportation Engineer, VRPA Technologies, Inc., jellard@vrpatechnologies.com, (559) 271-1200

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Appendix A – Acoustical terminology
Appendix B – TNM 2.5 Sound Level Worksheets
Appendix C – Caltrans' Technical Noise Supplement

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Executive Summary

This Noise Study Report (NSR) has been prepared for the purpose of identifying potential noise impacts related to the Deer Creek Rock Expansion (Project). The Project seeks an expansion of the existing Deer Creek Rock Co., Inc. site located in Tulare County. The Project is located south of Avenue 120 (Deer Creek Drive) approximately 1/2 mile east of Road 272 along the south bank of Deer Creek. The Applicant is requesting an increase in annual production of 500,000 tons per year (from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year).

The Project lies within the central portion of the San Joaquin Valley. The Project is located on the Valley floor at an elevation of approximately 375 feet above sea level with the surrounding area mostly flat. The surrounding land uses are predominantly foothill grazing (to the north, south, and east) and orchards (to the west). There are single-family rural residences located on Deer Creek Drive at Road 272. However, there are no schools, airports, or scenic roads within a two-mile radius of the Project site. Natural resources mining is permitted with a surface mining permit and reclamation plan, in accordance with Chapter 25 of Part VII of the Tulare County Ordinance Code. A portion of the Project site currently supports agricultural grazing, and the disturbed Project site areas are proposed to be reclaimed for grazing and agricultural uses in the future, pursuant to the Reclamation Plan.

Access to the Project site will be from Avenue 120/Deer Creek Drive. Vehicles exiting the facility are expected to travel on Road 264 and then north to Avenue 116/Road 252 or south to Road 264. The nearest state highway that provides direct regional access to the Project site is State Route (SR) 65 (located approximately 4.5 miles west of the site).

IMPACTS

Exterior Noise Analysis

Traffic Noise

Existing Plus Project traffic noise levels were established based on previously collected traffic data and using the Traffic Noise Model (TNM) Version 2.5. Existing Plus Project levels, which are based on expected Project trip distribution, are calculated and compared to both the existing noise level and the maximum allowable noise exposure for transportation noise sources as described in the Tulare County's General Plan.

Traffic volumes associated with the Project in addition to existing traffic along roadway segments in the study area were entered into the model to estimate noise levels at various receivers that would be affected by the Project. Tables E-1, E-2, and E-3 show the predicted noise levels at sensitive receivers in the Project area that could potentially be exposed to high noise levels due to the Project's proximity to existing street traffic. Results of the analysis show that none of the

sensitive receivers will exceed Tulare County's Land Use Compatibility for Community Noise Environments. As a result, the Project will not create a significant impact at sensitive receptors in the study area.

Stationary Noise

Noise sources identified on the Project site are related to surface mining activities, including loaders, excavators, service trucks, water trucks, and dumb trucks importing/hauling material. The nearest residence to the proposed expanded mining area is located approximately 450 feet south of the Project site.

Table E-4 shows the predicted noise generation of the individual on-site noise sources at the nearest residence. In order to determine the cumulative effect of the on-site noise sources, methodology found in Caltrans' Technical Noise Supplement was used. Based on the decibel addition methodology found in Caltrans' Technical Noise Supplement, it was determined that the noise levels experienced at the nearest residence is approximately 73 dBA, if all equipment is operating at the same time in the same activity area. Therefore, on-site operations from the Project have a less than significant impact on the nearest residence south of the Property's boundary.

Table E-1
Existing Plus Project Noise Levels

Receptor I.D. No.	Type of Development	Existing Plus Project Noise Level Leq(h) dBA	Tulare County Noise Standard dBA Ldn	Impact
1	Commercial	66.0	70.0	None
2	Residential	53.0	60.0	None
3	Residential	56.0	60.0	None
4	Residential	59.0	60.0	None
5	Residential	57.0	60.0	None
6	Residential	56.0	60.0	None
7	School	48.0	70.0	None

Table E-2
Near-Term Noise Levels

Receptor I.D. No.	Type of Development	Near-Term Without Project Noise Level Leq(h) dBA	Near-Term Plus Project Noise Level Leq(h) dBA	Noise Increase (+) or Decrease (-)	Tulare County Noise Standard dBA Ldn	Impact
1	Commercial	66.0	66.0	0.0	70.0	None
2	Residential	51.0	53.0	2.0	60.0	None
3	Residential	54.0	56.0	2.0	60.0	None
4	Residential	58.0	60.0	2.0	60.0	None
5	Residential	57.0	57.0	0.0	60.0	None
6	Residential	55.0	56.0	1.0	60.0	None
7	School	48.0	48.0	0.0	70.0	None

Table E-3
Cumulative Year 2040 Noise Levels

Receptor I.D. No.	Type of Development	Cumulative Year 2040 Without Project Noise Level Leq(h) dBA	Cumulative Year 2040 Plus Project Noise Level Leq(h) dBA	Noise Increase (+) or Decrease (-)	Tulare County Noise Standard dBA Ldn	Impact
1	Commercial	68.0	68.0	0.0	70.0	None
2	Residential	53.0	54.0	1.0	60.0	None
3	Residential	56.0	57.0	1.0	60.0	None
4	Residential	59.0	60.0	1.0	60.0	None
5	Residential	58.0	59.0	1.0	60.0	None
6	Residential	58.0	58.0	0.0	60.0	None
7	School	50.0	50.0	0.0	70.0	None

Table E-4
Project On-Site Noise Sources

Noise Source	Sound Levels Measured (dBA at 100 feet)	Sound Levels at nearest residence, approximately 450 feet south of Project boundary (dBA) [4]
Excavation	67 [1]	54
Rock Drills	79 [2]	66
Processing Plant	83 [3]	70
Front-End Loader	74 [2]	61
Trucks	78 [2]	65

[1] Reference measurement data from "Woolstenhulme Ranch Noise Impact Assessment", Merced County, California. Prepared by RGP Planning & Development Services, July 1999.

[2] Noise Control for Buildings and Manufacturing Plants (Bolt, Beranek and Newman, 1987).

[3] Reference measurement data from "Noise Assessment for the Horowitz Quarry", Riverside County, California. Prepared by Mestre Greve Associates, August 1990.

[4] Determined from sound levels at 100 feet and noise attenuation due to distance

CEQA ENVIRONMENTAL CHECKLIST

In accordance with the California Environmental Quality Act (CEQA), the effects of a Project were evaluated to determine if they will result in significant adverse impacts on the environment. The criteria used to determine the significance of a noise impact are based on the following thresholds of significance, which come from Appendix G of the CEQA Guidelines. Accordingly, noise impacts resulting from the Project are considered significant if the Project would result in:

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

Short-Term Impacts

There are no construction activities associated with the Project's request to increase annual production from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year.

Long-Term Impacts

Traffic Noise

Tables E-1, E-2, and E-3 show the predicted noise levels at sensitive receivers in the study area as a result of adding traffic associated with the Project. Results of the analysis show that none of the sensitive receivers will exceed the Tulare County's Land Use Compatibility for Community Noise Environments criteria for the Existing Plus Project, Near-Term, and Cumulative Year 2040 scenarios. As a result, Project traffic will not create a significant impact at sensitive receptors in the study area. The Project generates an increase of 1 dB or less with the addition of Project traffic to the surrounding roadway network considering the Cumulative Year 2040 scenario. Implementation of the Project will not result in significant adverse impacts from traffic noise levels within the Project study area. Therefore, no mitigation measures are needed.

Stationary Noise

Section 4.2 indicates that noise levels experienced at the nearest residence as a result of the Project is approximately 73 dBA, if all equipment is operating at the same time in the same activity area. Therefore, on-site operations from the Project have a less than significant impact on the nearest residence south of the Property's boundary considering Tulare County's Land Use Compatibility for Community Noise Environments.

b) Generation of excessive ground-borne vibration or ground-borne noise levels?

Surface mining activities can result in ground vibration, depending upon the types of equipment used. Operation of on-site equipment causes ground vibrations which spread through the ground and diminish in strength with distance from the source generating the vibration. Building structures that are founded on the soil in the vicinity of the site respond to these vibrations, with varied results. Ground vibrations as a result of site activities very rarely reach vibration levels that will damage structures but can cause low rumbling sounds and feelable vibrations for buildings very close to the site. Project site activities that generally create the most severe vibrations are blasting and impact pile driving.

Ambient vibration levels in residential areas are typically 50 VdB, which is well below human perception. The operation of heating/air conditioning systems and slamming of doors produce typical indoor vibrations that are noticeable to humans. The most common exterior sources of ground vibration that can be noticeable to humans inside residences include constructions activities, train operations, and street traffic.

The nearest residence to the proposed expanded mining area is located approximately 450 feet south of the Project site. Using the highest vibration level shown in Table 4 (L_v 87) and the formula shown above, the anticipated vibration level at the nearest residence is 62 VdB. As a result, mining activity related vibration from the proposed Project is considered less than significant.

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

The Project is not located within the vicinity of a private airstrip or an airport land use plan or within two miles of a public airport or public use airport. The Porterville Municipal Airport is the closest public airport and is located approximately 5.5 miles northwest of the Project site. Therefore, the Project will not result in the stated impact. No Mitigation is needed.

1.0 Introduction

1.1 Description of the Region/Project

This Noise Study Report (NSR) has been prepared for the purpose of identifying potential noise impacts related to the Deer Creek Rock Expansion (Project). The Project seeks an expansion of the existing Deer Creek Rock Co., Inc. site located in Tulare County. The Project is located south of Avenue 120 (Deer Creek Drive) approximately 1/2 mile east of Road 272 along the south bank of Deer Creek. The Applicant is requesting an increase in annual production of 500,000 tons per year (from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year).

The Project lies within the central portion of the San Joaquin Valley. The Project is located on the Valley floor at an elevation of approximately 375 feet above sea level with the surrounding area mostly flat. Figures 1 and 2 show the location of the Project along with major roadways and highways and study intersections and segments.

The surrounding land uses are predominantly foothill grazing (to the north, south, and east) and orchards (to the west). There are single-family rural residences located on Deer Creek Drive at Road 272. However, there are no schools, airports, or scenic roads within a two-mile radius of the Project site. Natural resources mining is permitted with a surface mining permit and reclamation plan, in accordance with Chapter 25 of Part VII of the Tulare County Ordinance Code. A portion of the Project site currently supports agricultural grazing, and the disturbed Project site areas are proposed to be reclaimed for grazing and agricultural uses in the future, pursuant to the Reclamation Plan.

Access to the Project site will be from Avenue 120/Deer Creek Drive. Vehicles exiting the facility are expected to travel on Road 264 and then north to Avenue 116/Road 252 or south to Road 264. The nearest state highway that provides direct regional access to the Project site is State Route (SR) 65 (located approximately 4.5 miles west of the site).

1.2 Roadway Network

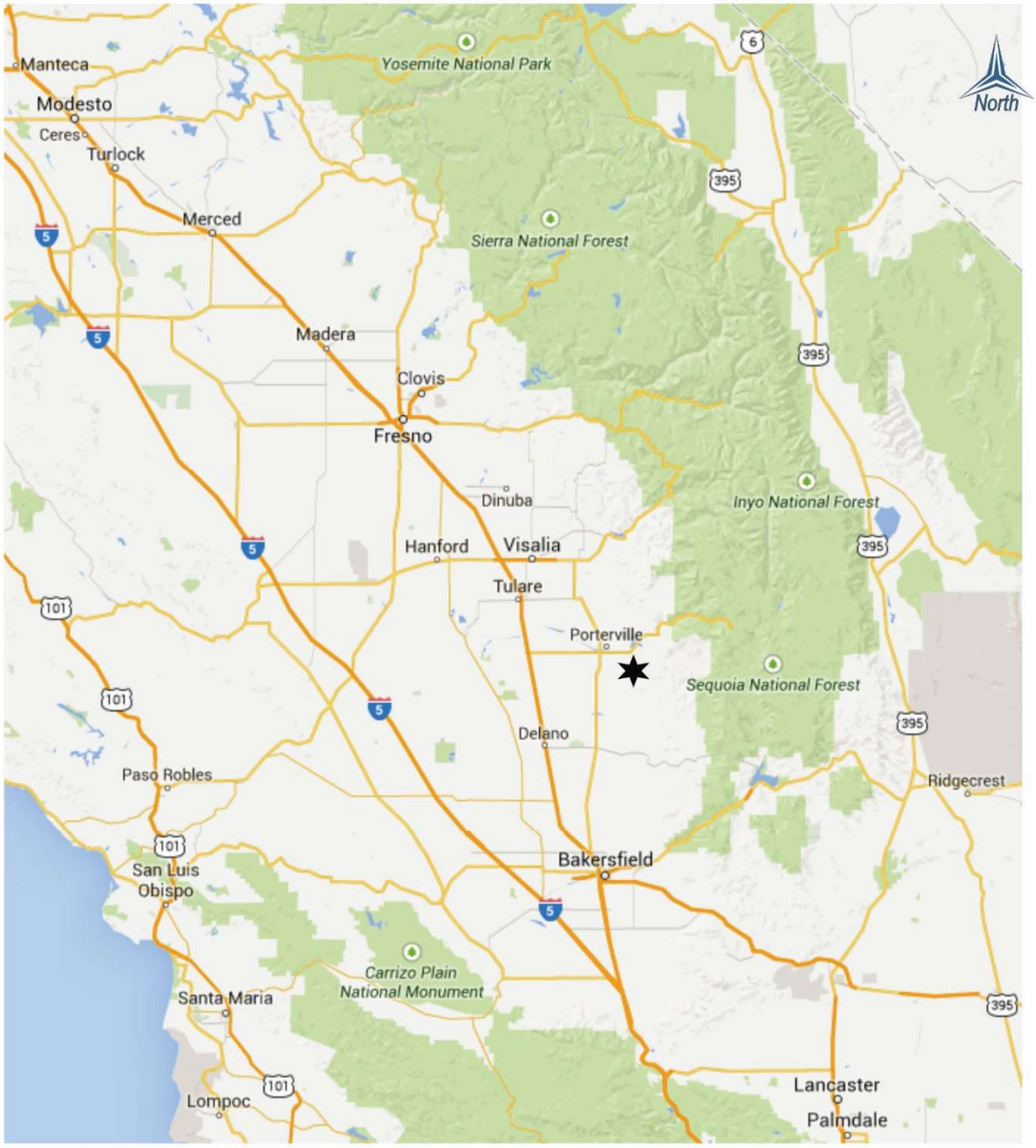
Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the type of service they are intended to provide. Fundamental to this process is the recognition that individual streets and highways do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads.

The current hierarchical system of roadways within the County of Tulare's sphere of influence consists of the following four (4) basic classifications:

- ✓ **State Freeways and Highways** – 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.

Deer Creek Rock Co., Inc. Expansion
Regional Location

Figure 1



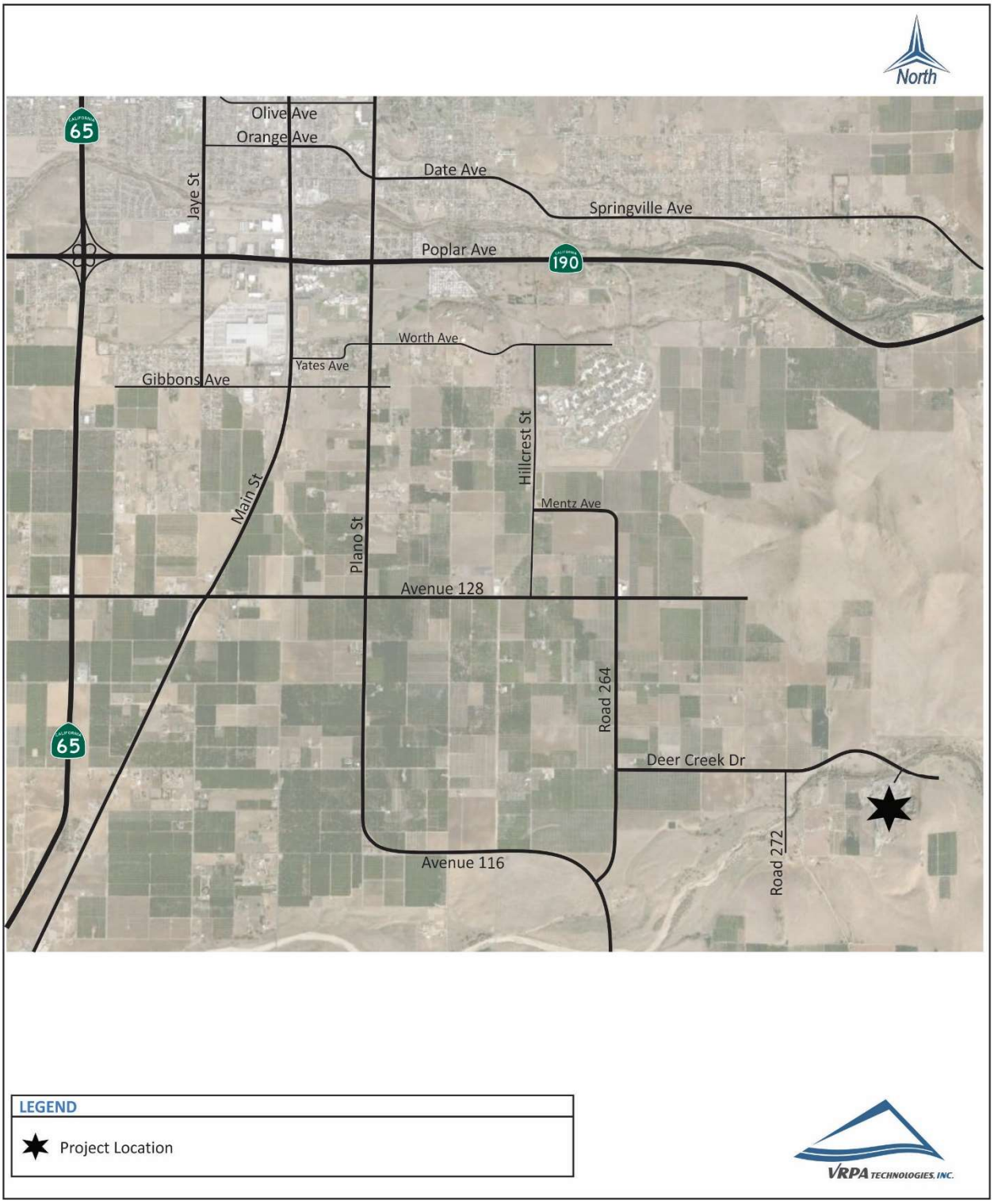
LEGEND

★ Project Location

VRPA TECHNOLOGIES, INC.

Deer Creek Rock Co., Inc. Expansion
Project Location

Figure 2



- ✓ **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.

    - **State Route 65** - currently exists as a four-lane divided roadway with a posted speed limit of 55 mph through the study area. According to the California Department of Transportation's website, the average annual daily traffic (AADT) along SR-65 in this area consisted of approximately 15,300 trips in 2017.

- ✓ **Collectors** – provide for internal traffic movement within communities and connect local roads to arterials. Direct access to abutting private property shall generally be permitted. While not specifically identified in the Circulation Element of the Tulare County General Plan Update, the following roadways are assumed to serve as collectors.

    - **Avenue 128** - currently exists as a two-lane undivided roadway without bike lanes and without a posted speed limit through the study area, except for the school zone which contains a posted speed limit of 25 mph.

    - **Plano Street/Avenue 116** - currently exists as a two-lane undivided roadway without bike lanes and without a posted speed limit through the study area.
    - **Road 264** - currently exists as a two-lane undivided roadway without bike lanes and without a posted speed limit through the study area.
    - **Deer Creek Drive** - currently exists as a two-lane undivided roadway without bike lanes and without a posted speed limit through the study area.

- ✓ **Local Streets** – Roadways which 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.

1.3 Sound and the Human Ear

Sound levels are presented on a logarithmic scale to account for the large range of acoustic pressures that the human ear is exposed to and is expressed in units of decibels (dB). A decibel is defined as the ratio between a measured value and a reference value usually corresponding to the lower threshold of human hearing defined as 20 micro pascals (µPa). Noise can generally be described as unwanted sound and has been cited as being a health problem, not just in terms of actual physiological damages such as hearing impairment, but also in terms of inhibiting general wellbeing and contributing to stress and annoyance. Long or repeated exposure to sounds at or above 85 dB can cause hearing loss. The louder the sound, the shorter the time period before

hearing loss can occur. Sounds of less than 75 dB are unlikely to cause hearing loss even after long exposure.[1]

1.3.1 *A-Weighted Decibels*

Sound pressure level alone is not a reliable indicator of loudness. The frequency, or pitch, of a sound also has a substantial effect on how humans will respond. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear. Human hearing is limited not only in the range of audible frequencies but also in the way it perceives the SPL in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, and it perceives a sound within that range as being more intense than a sound of higher or lower frequency with the same magnitude. To approximate the frequency response of the human ear, a series of SPL adjustments is usually applied to the sound measured by a sound level meter. The adjustments (referred to as a weighting network) are frequency dependent. The A-scale weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-scale, C-scale, D-scale), but these scales are rarely, if ever, used in conjunction with highway traffic noise. Noise levels for traffic noise reports are typically reported in terms of A-weighted dBAs. In environmental noise studies, A-weighted SPLs are commonly referred to as noise levels.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance, and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment, referred to as the "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by the hearers. Regarding increases in A-weighted noise level, knowledge of the following relationships will be helpful in understanding this report:

1. Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans.
2. Outside of the laboratory, a 3 dB change is considered a just-perceivable difference.
3. A change in level of at least 5 dB is required before any noticeable change in community response would be expected.
4. A 10 dB change is subjectively heard as approximately a doubling in loudness.

1 Source: National Institute on Deafness and Other Hearing Disorders

1.3.2 *Sound Pressure Levels and Decibels*

Because of the ability of the human ear to detect a wide range of sound pressure fluctuations, sound pressure levels are expressed in logarithmic units called decibels. The sound pressure level in decibels is calculated by taking the log of the ratio between the actual sound pressure and the reference sound pressure squared. The reference sound pressure is considered the absolute hearing threshold. In addition, because the human ear is not equally sensitive to all sound frequencies, a specific frequency-dependent rating scale was devised to relate noise to human sensitivity. A dBA scale performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. The basis for comparison is the faintest sound audible to the average ear at the frequency of maximum sensitivity. This dBA scale has been chosen by most authorities for purposes of environmental noise regulation. Typical indoor and outdoor noise levels are presented in Figure 3 (Common Environmental Sound Levels).

1.3.3 *Sound, Noise, and Acoustics*

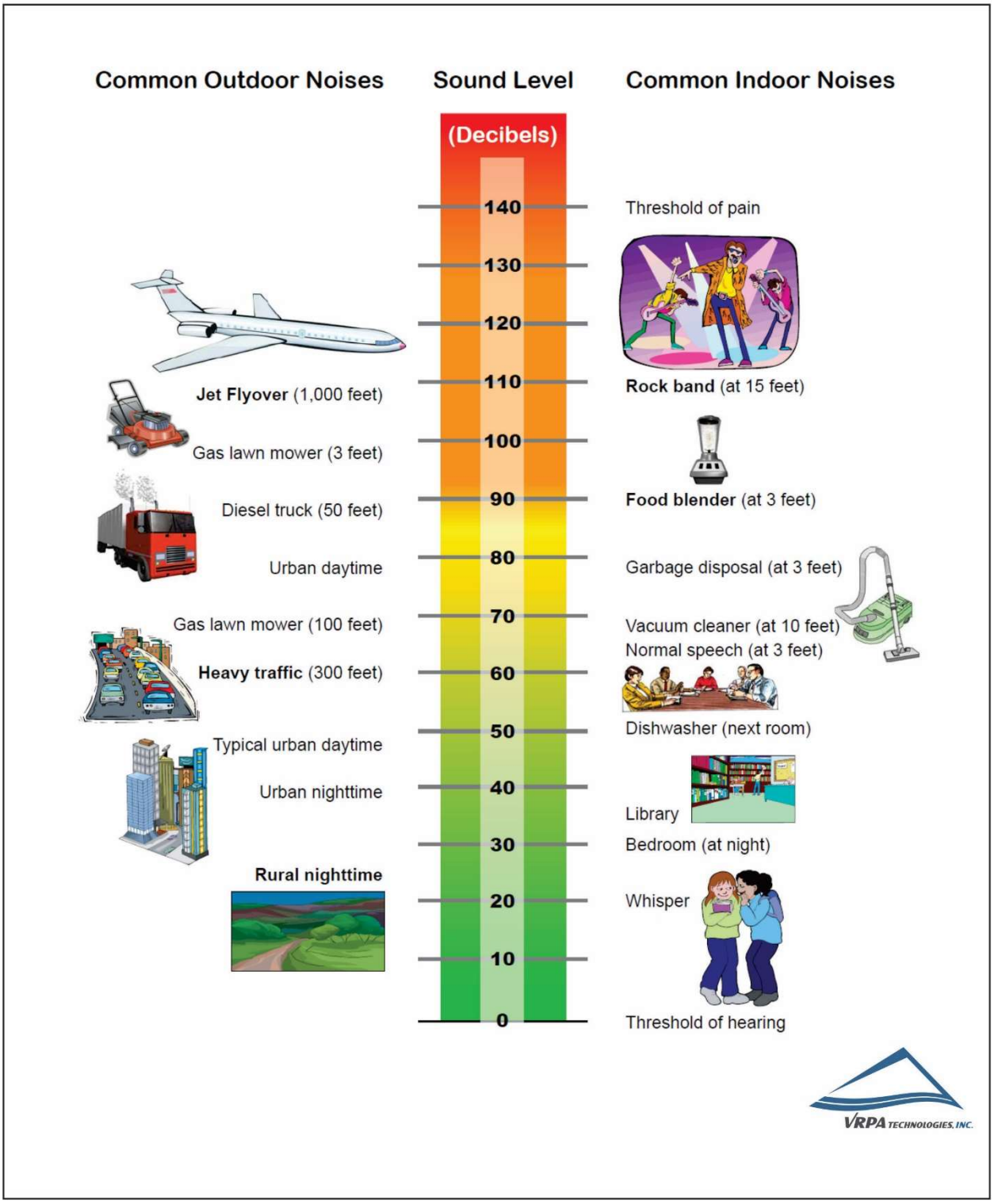
Sound is a disturbance created by a moving or vibrating source in a gaseous or liquid medium or the elastic stage of a solid and is capable of being detected by the hearing organs. Sound may be thought of as the mechanical energy of a vibrating object transmitted by pressure waves through a medium to a hearing organ, such as a human ear. For traffic sound, the medium of concern is air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. Sound is actually a process that consists of three components: the sound source, the sound path, and the sound receiver. All three components must be present for sound to exist. Without a source to produce sound, there is no sound. Likewise, without a medium to transmit sound pressure waves, there is also no sound. Finally, sound must be received; a hearing organ, sensor, or object must be present to perceive, register, or be affected by sound or noise. In most situations, there are many different sound sources, paths, and receivers rather than just one of each. Acoustics is the field of science that deals with the production, propagation, reception, effects, and control of sound.

1.3.4 *Frequency and Hertz*

A continuous sound can be described by its frequency (pitch) and its amplitude (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch, like the low notes on a piano, whereas high-frequency sounds are high in pitch, like the high notes on a piano. Frequency is expressed in terms of oscillations, or cycles, per second. Cycles per second are commonly referred to as Hertz (Hz). A frequency of 250 cycles per second is referred to as 250 Hz. High frequencies are sometimes more conveniently expressed in units of kilo-Hertz (kHz), or thousands of Hertz. The extreme range of frequencies that can be heard by the healthiest human ear spans from 16–20 Hz on the low end to about 20,000 Hz (or 20 kHz) on the high end.

Deer Creek Rock Co., Inc. Expansion
Common Environmental Noise Levels

Figure 3



1.3.5 *Addition of Decibels*

Because decibels are logarithmic units, sound pressure levels cannot be added or subtracted by ordinary arithmetic means. For example, if one automobile produces an SPL of 70 dBA as it passes an observer, two cars passing simultaneously would not produce 140 dBA; they would, in fact, combine to produce 73 dBA. When two sounds of equal SPL are combined, they will produce a combined SPL 3 dBA greater than the original individual SPL. In other words, sound energy must be doubled to produce a 3 dBA increase. If two sound levels differ by 10 dBA or more, the combined SPL is equal to the higher SPL; in other words, the lower sound level does not increase the higher sound level.

1.4 Characteristics of Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks, and airplanes, and stationary sources such as construction sites, machinery, and industrial operations.

Noise generated by mobile sources typically attenuates (is reduced) at a rate between 3.0 and 4.5 dBA per doubling of distance. The rate depends on the ground surface and the number or type of objects between the noise source and the receiver. Hard and flat surfaces, such as concrete or asphalt, have an attenuation rate of 3.0 dBA per doubling of distance. Soft surfaces, such as uneven or vegetated terrain, have an attenuation rate of about 4.5 dBA per doubling of distance.

Noise generated by stationary sources typically attenuates at a rate between 6.0 and about 7.5 dBA per doubling of distance. Sound levels can be reduced by placing barriers between the noise source and the receiver (commonly called the “receptor”). In general, barriers contribute to decreasing noise levels only when the structure breaks the “line of sight” between the source and the receiver. Buildings, concrete walls, and berms can all act as effective noise barriers. Wooden fences or broad areas of dense foliage can also reduce noise but are less effective than solid barriers.

1.4.1 *Noise Descriptors*

Noise in the daily environment fluctuates over time. Some of the fluctuations are minor; some are substantial. Some noise levels occur in regular patterns; others are random. Some noise levels fluctuate rapidly, others slowly. Some noise levels vary widely; others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following is a list of the noise descriptors most commonly used in traffic noise analysis:

1. **Equivalent Sound Level (Leq) -** Leq represents an average of the sound energy occurring over a specified period. Leq is, in effect, the steady-state sound level that, in a stated period, would contain the same acoustical energy as the time-varying sound that actually occurs during the

same period. The one-hour A-weighted equivalent sound level, Leq(h), is the energy average of the A-weighted sound levels occurring during a one-hour period and is the basis for the Noise Abatement Criteria (NAC) used by the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA).

2. **Percentile-Exceeded Sound Level (Lx) -** Lx represents the sound level exceeded for a given percentage of a specified period. For example, L10 is the sound level exceeded 10 percent of the time, and L90 is the sound level exceeded 90 percent of the time.
3. **Maximum Sound Level (Lmax) -** Lmax is the highest instantaneous sound level measured during a specified period.

1.4.2 *Sound Propagation*

When sound propagates over a distance, it changes in both level and frequency content. The manner in which noise reduces with distance depends on the following factors:

1. Geometric Spreading - Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates (or drops off) at a rate of six dBA for each doubling of distance. Highway noise is not a single, stationary point source of sound. The movement of the vehicles on a highway makes the source of the sound appear to emanate from a line (i.e., a line source) rather than a point. This line source results in cylindrical spreading rather than the spherical spreading that results from a point source. The change in sound level from a line source is 3 dBA per doubling of distance.
2. Ground Absorption - Most often, the noise path between the highway and the observer is very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is done for simplification only; for distances of less than 60 m (200 ft), prediction results based on this scheme are sufficiently accurate. For acoustically hard sites (i.e., those sites with a reflective surface, such as a parking lot or a smooth body of water, between the source and the receiver), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees, between the source and the receiver), an excess ground attenuation value of 1.5 dBA per doubling of distance is normally assumed. When added to the geometric spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dBA per doubling of distance for a line source and 7.5 dBA per doubling of distance for a point source.
3. Atmospheric Effects - Research by Caltrans and others has shown that atmospheric conditions can have a significant effect on noise levels within 60 m (200 ft) of a highway. Wind has been shown to be the most important meteorological factor within approximately 150 m (500 ft) of the source, whereas vertical air temperature gradients are more important for greater distances. Other factors such as air temperature, humidity, and turbulence also have significant effects. Receivers located downwind from a source can be exposed to increased

noise levels relative to calm conditions, whereas locations upwind can have lower noise levels. Increased sound levels can also occur as a result of temperature inversion conditions (i.e., increasing temperature with elevation).

4. Shielding by Natural and Human-Made Features - A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by this shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dBA of noise reduction.

1.5 Ground-borne Vibration

Annoyance to humans and damage to buildings are the two ground-borne vibration impacts of general concern. The two measurements corresponding to human annoyance and building damage for evaluating ground-borne vibration are peak particle velocity (PPV) and root-mean square (RMS) velocity. PPV is the maximum instantaneous positive or negative peak of the vibration signal, measured as a distance per time (such as millimeters or inches per second). This measurement 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. RMS is an average, or smoothed, vibration amplitude, commonly measured over 1-second intervals. It is expressed on a log scale in decibels (VdB) referenced to 0.000001 x 10-6 inch per second and is not to be confused with noise decibels. It is more suitable for addressing human annoyance and characterizing background vibration conditions because it better represents the response time of humans to ground vibration signals.

1.6 Methodology

When preparing an NSR, guidelines set by affected agencies must be followed. Acoustical terminology used for this NSR is documented in Appendix A. In analyzing traffic noise levels, the FHWA Highway Traffic Noise Prediction methodology must be applied. Safety concerns must also be analyzed to determine the need for appropriate mitigation resulting from increased noise due to increased traffic and other evaluations such as the need for noise barriers and other noise abatement improvements. Stationary noise levels were evaluated using Section 2.1.4 of the California Department of Transportation's (Caltrans) Technical Noise Supplement which evaluates the decrease in noise as distance from the noise source increases. Unless otherwise stated, all sound levels reported are in A-weighted decibels (dBA). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards use A-weighting, as it provides a high degree of correlation with human annoyance and health effects.

1.6.1 *California Environmental Quality Act (CEQA)*

CEQA requires environmental impact reports to evaluate whether and to what extent a proposed project may result in significant effects on the environment. If a project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are also evaluated and determined to not be feasible. An EIR is also required to evaluate a reasonable range of alternatives to the proposed Project that could feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project. An EIR must also evaluate a "No Project" Alternative. CEQA Guidelines Appendix G suggests the following as potential thresholds for determining whether a project will result in significant impacts on the environment:

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

1.6.2 *Tulare County*

The Health and Safety section of Tulare County's 2030 General Plan serves as the primary policy statement for the County for implementing policies to maintain and improve the noise environment in Tulare County. The Health and Safety section presents Goals and Objectives relative to planning for the noise environment within the County. Future noise/land use incompatibilities can be avoided or reduced with implementation of Tulare County's noise criteria and standards. Tulare County realizes that it may not always be possible to avoid constructing noise sensitive developments in existing noisy areas and therefore provides noise reduction strategies to be implemented in situations with potential noise/land use conflicts.

Table 1 shows Tulare County's Land Use Compatibility for Community Noise Environments. During preparation of this NSR, conformance of the project with the Land Use Compatibility for Community Noise Environments is used to evaluate potential noise impacts and provides criteria for environmental impact findings and conditions for project approval.

1.6.3 *Study Methods and Procedures*

<u>Site Selection</u>

Developed and undeveloped land uses in the project vicinity were identified through land use maps, aerial photography, and site inspection. Within each land use category, sensitive receptors

were then identified. Land uses in the project vicinity include agricultural, single-family residences, and industrial/Office uses. The generalized land use data and location of particular sensitive receptors were the basis for the selection of the noise monitoring and analysis sites. A total of two (2) field receptor locations were measured during the site evaluation and represent a commercial land use as well as a residential land use in the project vicinity. These field receptor locations are shown in Figure 4. Figure 4 also shows additional modeled receptor locations that reflect locations of other sensitive receptor locations. Modeled receptors 3 - 6 represent outdoor areas of residential uses and receptor 7 represents a school land use.

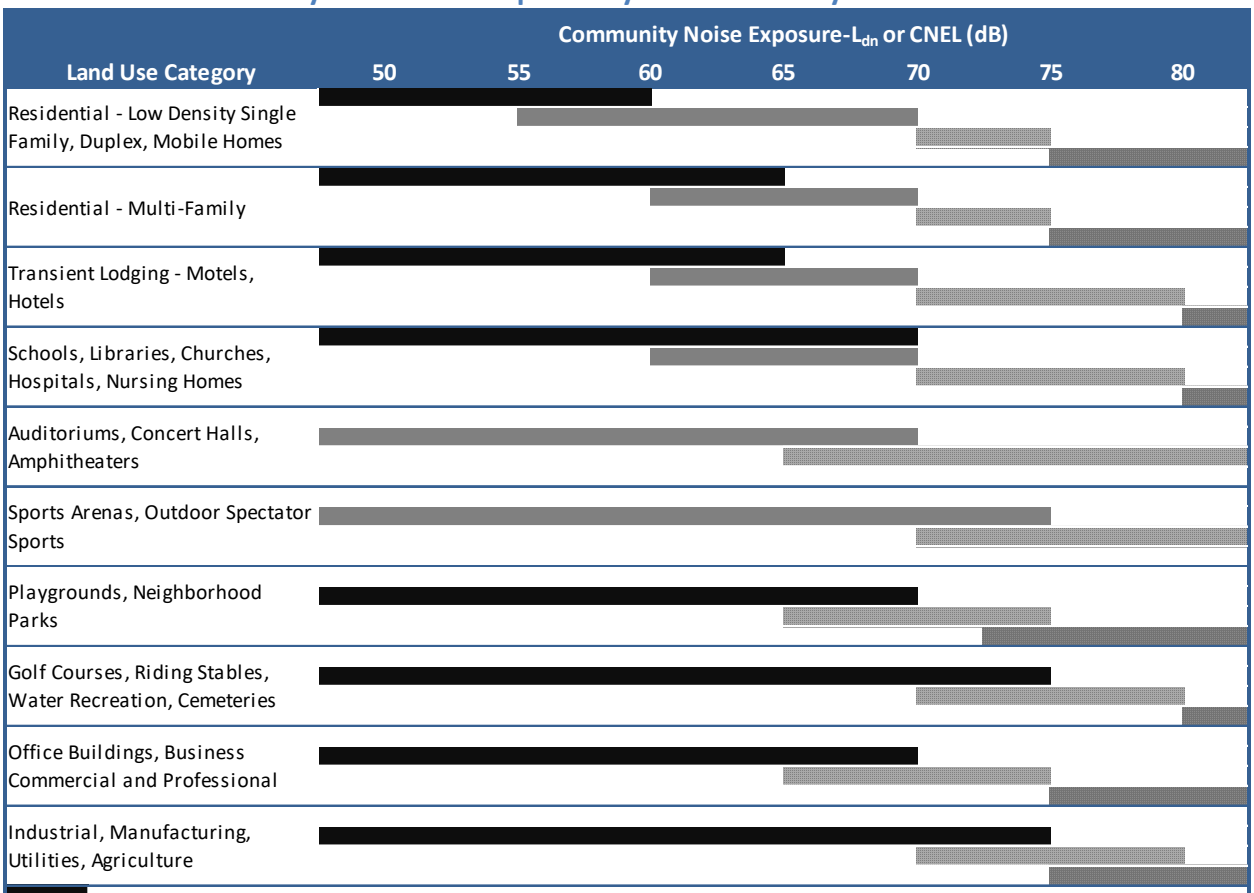
Noise Level Measurement Program

Existing noise levels in the project vicinity were sampled during the PM peak hour because traffic counts conducted in the study area show a greater volume of traffic in the PM peak hour than the AM peak hour. All measurements were made using an Extech Type 2 sound level meter datalogger.

The following measurement procedure was utilized:

1. Calibrate sound level meter.
2. Set up sound level meter at a height of 1.5 m (5 ft).
3. Commence noise monitoring.
4. Collect site-specific data such as date, time, direction of traffic, and distance from sound level meter to the center of the roadway.
5. Stop measurement after 15 minutes.
6. Proceed to next monitoring site and repeat.

Table 1
Tulare County Land Use Compatibility for Community Noise Environments

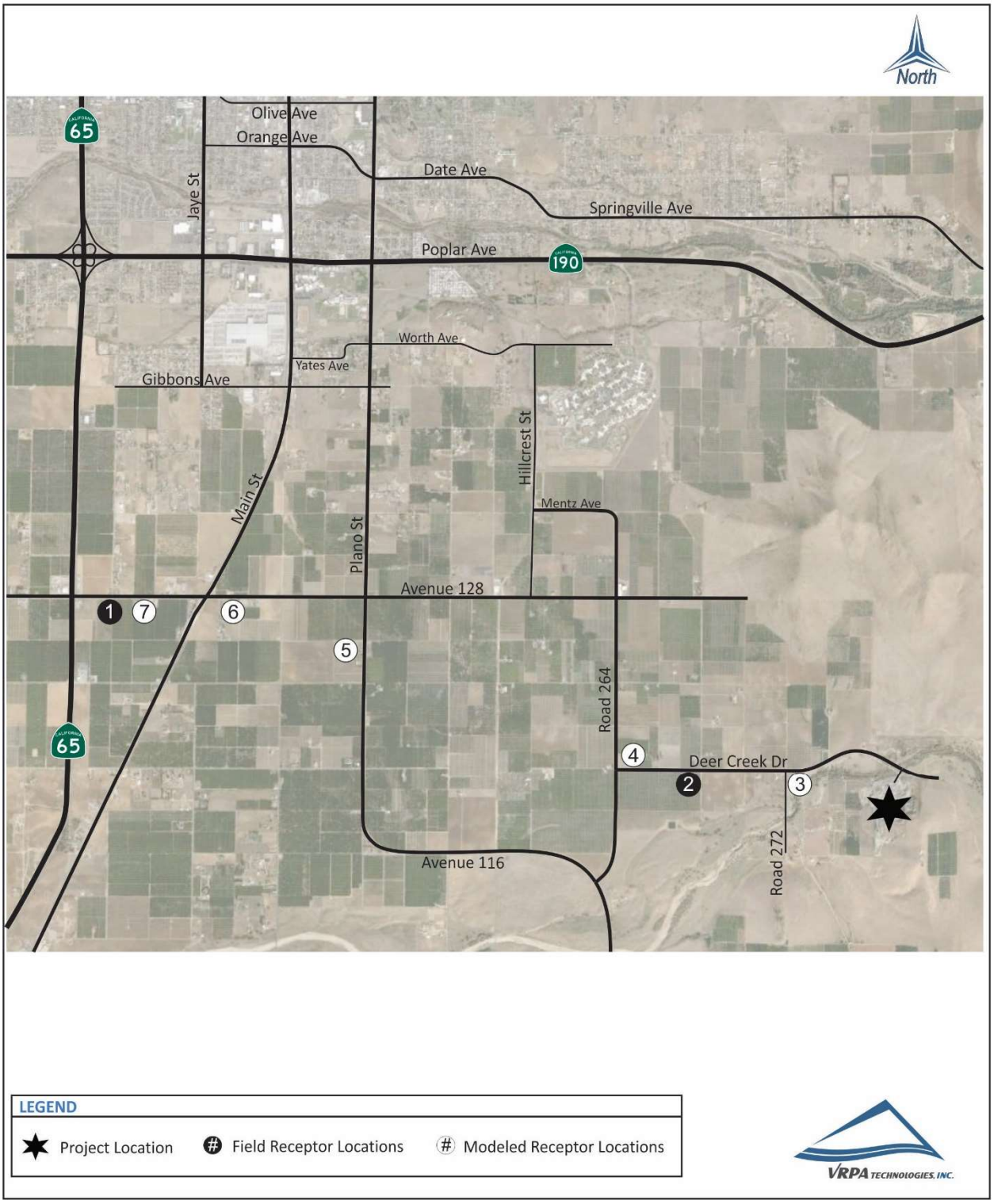


	Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
	Conditionally Acceptable	New construction or development should be undertaken only after a detailed 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: Tulare County General Plan

Deer Creek Rock Co., Inc. Expansion
Noise Receptor Locations

Figure 4



2.0 Existing Conditions

Noise can generally be described as unwanted sound and has been cited as being a health problem, not just in terms of actual physiological damages such as hearing impairment, but also in terms of inhibiting general wellbeing and contributing to stress and annoyance. Long or repeated exposure to sounds at or above 85 decibels can cause hearing loss. The louder the sound, the shorter the time period before hearing loss can occur. Sounds of less than 75 decibels are unlikely to cause hearing loss even after long exposure.[2] Noise is generated by either mobile or stationary sources.

- ✓ Mobile source noise is typically associated with transportation, such as cars, trains, and aircraft.
- ✓ Stationary noise sources are any 'fixed' noise generating source. Examples of stationary sources include outdoor machinery (i.e. such as heating/air conditioning systems) and industrial areas within the study area. Noise generated from construction sites also falls into the category of stationary sources.

2.1 Traffic Noise

Existing traffic noise levels are established based on previously collected traffic data (Table 2) and using the Traffic Noise Model (TNM) Version 2.5. TNM 2.5 is an FHWA Traffic Noise Prediction Program. Once existing levels are established, future levels, based on expected traffic growth, are calculated and compared to both the existing noise level and the maximum allowable noise exposure to noise generation sources as described in Tulare County's General Plan. Referencing Table 1, Tulare County's criteria shows that mitigation must be considered when the exterior noise exposure level of 60 Ldn/CNEL for single family residential and exterior noise exposure level of 65 to 70 Ldn/CNEL for multi-family, transient lodging, hospitals, churches, schools, business commercial and meeting halls has been exceeded. Levels reported in this section are in terms of A-weighted levels.

To assess the traffic noise impacts from the project on the adjacent receptors, the first step is to determine the baseline or the existing noise condition. The second is to then compare the baseline to future level results, based on expected traffic growth, and Tulare County's Land Use Compatibility for Community Noise Environments.

To assess existing noise conditions, VRPA Technologies staff compiled current traffic counts and existing geometric conditions. Staff conducted noise level measurements within the project site and tabulated the results. The weather during the time of the noise measurements consisted of sunshine and wind speeds of less than 5 mph. The purpose of the measurements was to evaluate the accuracy of the model in describing traffic noise exposure within the project site.

The locations for each 'field' receptor location are described below in Table 2 and are

2 Source: National Institute on Deafness and Other Hearing Disorders

geographically depicted in Figure 4.

Table 2 characterizes the results of the existing noise conditions at the two (2) receivers evaluated in the study area. Traffic noise exposure is mainly a function of the number of vehicles on a given roadway per day, the speed of those vehicles, the percentage of medium and heavy trucks in the traffic volume, and the receiver's proximity to the roadway. Every vehicle passage on every roadway in the County radiates noise.

Existing high noise levels along major streets and highways are generally caused by traffic and congestion. Potential impacts along these facilities are generally classified as follows:

- ✓ Low - Ldn 59 dB or below
- ✓ Moderate - Ldn 60 dB to 65 dB
- ✓ High - Ldn 66 dB or greater

The potential for adverse noise impacts is generally moderate to high along most segments of State highways and is generally low to moderate along most segments of County streets and highways.

As shown in Table 2, the highest peak hour sound level recorded, 65.0 L_{eq}(h) dBA, was taken along Avenue 128. When it comes to noise levels, the Ldn is determined to be within +/- 2 dBA of the peak hour L_{eq} under normal traffic conditions based upon Caltrans' Traffic Analysis Noise Protocol. Therefore, none of the existing noise levels exceed Tulare County's Land Use Compatibility for Community Noise Environments.

Table 2
Existing Noise Levels

Receptor I.D. No.	Location	Type of Development	Existing Noise Level Leq(h) dBA
1	Commercial-MiniMart/Gas Station. Approximately 20 feet from Avenue 128 Centerline	Commercial	65.0
2	Aggricultural Residence. Approximately 150 feet from Deer Creek Drive Centerline	Residence	48.0

2.2 Ground-borne Vibration

Ambient vibration levels in residential areas are typically 50 VdB, which is well below human perception. The operation of heating/air conditioning systems and slamming of doors produce typical indoor vibrations that are noticeable to humans. The most common exterior sources of ground vibration that can be noticeable to humans inside residences include construction activities, train operations, and street traffic. Table 3 provides some common sources of ground

vibration and the relationship to human perception. This information comes from the Federal Transit Administration's "Basic Ground-Bourne Vibration Concepts."

Table 3
Typical Levels of Ground-Borne Vibration

Human/Structural Response	Velovity Level, VdB	Typical Events (50 ft. Setback)
Threshold, minor cosmetic damage fragile buildings	100	Blasting from construction projects
		Bulldozers and other heavy tracked construction equiment
Difficulty with tasks such as reading a video or computer screen	90	
		Commuter rail, upper range
Residential annoyance, infrequent events (e.g commuter rail)	80	Rapid transit, upper range
		Commuter rail, typical
Residential annoyance, infrequent events (e.g rapid transit)		Bus or truck over bump
	70	Rapid transit, typical
Limit for vibration sensitive equipment. Approx. threshold for human perception of vibration		Bus or truck, typical
	60	
		Typical background vibration
	50	

3.0 Short-Term Impacts

3.1 Construction Noise Impacts

There are no construction activities associated with the Project's request to increase annual production from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year.

3.2 Ground-borne Vibration

Surface mining activities can result in ground vibration, depending upon the types of equipment used. Operation of on-site equipment causes ground vibrations which spread through the ground and diminish in strength with distance from the source generating the vibration. Building structures that are founded on the soil in the vicinity of the site respond to these vibrations, with varied results. Ground vibrations as a result of site activities very rarely reach vibration levels that will damage structures but can cause low rumbling sounds and feelable vibrations for buildings very close to the site. Project site activities that generally create the most severe vibrations are blasting and impact pile driving.

Vibration levels from various types of equipment are shown in Table 4. The primary concern with vibration generated by mining activities is building damage. Therefore, vibration is generally assessed in terms of peak particle velocity (PPV). It should be noted that there is a considerable variation in reported ground vibration levels from equipment used in surface mining operations. The data provides a reasonable estimate for a wide range of soil conditions.

Ambient vibration levels in residential areas are typically 50 VdB, which is well below human perception. The operation of heating/air conditioning systems and slamming of doors produce typical indoor vibrations that are noticeable to humans. The most common exterior sources of ground vibration that can be noticeable to humans inside residences include constructions activities, train operations, and street traffic. Table 3 provides some common sources of ground vibration and the relationship to human perception. This information comes from the Federal Transit Administration's "Basic Ground-Bourne Vibration Concepts."

Despite the perceptibility threshold of about 65 VdB, human reaction to vibration is not significant unless the vibration exceeds 75 VdB according to the United States Department of Transportation.

In order to estimate the impact of vibrations from mining activities for the proposed Project, the following formula was applied to evaluate ground vibration at the nearest residence to the Project site.

$L_v(D) = Lv(25\ ft) – 20 \log (D/25)$

The nearest residence to the proposed expanded mining area is located approximately 450 feet south of the Project site. Using the highest vibration level shown in Table 4 (L_v 87) and the formula shown above, the anticipated vibration level at the nearest residence is 62 VdB. As a result, mining activity related vibration from the proposed Project is considered less than significant.

Table 4
Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 ft (in/sec)	Approximate L_v* at 25 ft
Large bulldozer	0.089	87
Caisson drilling	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

* RMS velocity in decibels (VdB) re 1 minch/second

4.0 Long-Term Impacts

4.1 Traffic Noise Impacts

This section provides an assessment of the anticipated noise conditions in the future as it relates to the Project and the impact of increased traffic noise generated by the Project on the surrounding land uses within the study area. The noise impacts from the Project were analyzed considering Existing Plus Project, Near-Term Without Project, Near-Term Plus Project, Cumulative Year 2040 Without Project, and Cumulative Year 2040 Plus Project Conditions.

Existing Plus Project Conditions

Existing Plus Project traffic noise levels were established based on previously collected traffic data and using the Traffic Noise Model (TNM) Version 2.5. Existing Plus Project levels, which are based on expected Project trip distribution, are calculated and compared to both the existing noise level and the maximum allowable noise exposure for transportation noise sources as described in the Tulare County's General Plan. Referencing Table 1, Tulare County's criteria shows that mitigation must be considered when the exterior noise exposure level of 60 Ldn/CNEL for single family residential and exterior noise exposure level of 65 to 70 Ldn/CNEL for multi-family, transient lodging, hospitals, churches, schools, business commercial and meeting halls has been exceeded. Levels reported in this section are in terms of A-weighted levels. It should be noted that the Ldn is estimated to be within +/- 2 dBA of the peak hour L_{eq} under normal traffic conditions based upon Caltrans' Traffic Analysis Noise Protocol.

Traffic volumes associated with the Project in addition to existing traffic along roadway segments in the study area were entered into the model to estimate noise levels at various receivers that would be affected by the Project. In order to calibrate the TNM 2.5 model, the existing counts, lane geometry, and any other pertinent existing conditions were added to the model. The noise level measurements taken in the study area were then compared to the noise levels computed by the model. The difference between the measured and modeled noise levels, referred to as the "K constant", is then added to any additional receivers to be evaluated in the TNM 2.5 model.

Table 5 shows the predicted noise levels at sensitive receivers in the study area as a result of adding traffic associated with the Project. As shown in Table 5, the highest peak hour sound level recorded, 66.0 Leq(h) dBA, was taken along Avenue 128. When it comes to noise levels, the Ldn is determined to be within +/- 2 dBA of the peak hour Leq under normal traffic conditions based upon Caltrans' Traffic Analysis Noise Protocol. Therefore, none of the Existing Plus Project noise levels exceed Tulare County's Land Use Compatibility for Community Noise Environments. TNM 2.5 printouts included are provided in the Appendix B. It should be noted that the noise levels presented in Table 5 do not account for noise attenuation caused by buildings or tree/shrubs that break the line of sight from the sound source to the receiver. A decibel reduction of 3 to 5 dBA is plausible when buildings or trees/shrubs break the line of sight

according to FHWA.

Table 5
Existing Plus Project Noise Levels

Receptor I.D. No.	Type of Development	Existing Plus Project Noise Level Leq(h) dBA	Tulare County Noise Standard dBA Ldn	Impact
1	Commercial	66.0	70.0	None
2	Residential	53.0	60.0	None
3	Residential	56.0	60.0	None
4	Residential	59.0	60.0	None
5	Residential	57.0	60.0	None
6	Residential	56.0	60.0	None
7	School	48.0	70.0	None

Near-Term Conditions

This section provides an assessment of the anticipated noise conditions in the near-term as it relates to the Project and the impact of increased traffic noise generated by the Project on the surrounding land uses within the study area. Traffic conditions for the Near-Term scenario was estimated by using a 1.5% per year growth factor for background (ambient) growth along Tulare County facilities. The Tulare County Association of Governments (TCAG) regional travel demonstrates a growth rate 0.5 to 2%. A 2.5% per year growth factor was applied to all intersections along SR 65 which is consistent with Caltrans' SR 65 Transportation Concept Report (TCR).

Table 6 shows the predicted noise levels at the modeled receivers evaluated in the study area for the Near-Term With and Without Project conditions. Results of the analysis show that none of the sensitive receivers will exceed Tulare County's Land Use Compatibility for Community Noise Environments. As a result, the Project will not create a significant impact at sensitive receptors in the study area. Table 6 also shows the increase in noise levels for the Near-Term scenario once

Project trips are added to the surrounding roadway system. Results show that the greatest increase in noise levels as a result of the Project is 2 Leq(h) dBA. Section 1.2.1 above indicates that a 3 dB change is considered a just-perceivable difference outside of the laboratory and that a change in level of at least 5 dB is required before any noticeable change in community response would be expected.

It should be noted that the noise levels presented in Table 6 do not account for noise attenuation caused by buildings or tree/shrubs that break the line of sight from the sound source to the receiver. A decibel reduction of 3 to 5 dBA is plausible when buildings or trees/shrubs break the line of sight according to FHWA.

Table 6
Near-Term Noise Levels

Receptor I.D. No.	Type of Development	Near-Term Without Project Noise Level Leq(h) dBA	Near-Term Plus Project Noise Level Leq(h) dBA	Noise Increase (+) or Decrease (-)	Tulare County Noise Standard dBA Ldn	Impact
1	Commercial	66.0	66.0	0.0	70.0	None
2	Residential	51.0	53.0	2.0	60.0	None
3	Residential	54.0	56.0	2.0	60.0	None
4	Residential	58.0	60.0	2.0	60.0	None
5	Residential	57.0	57.0	0.0	60.0	None
6	Residential	55.0	56.0	1.0	60.0	None
7	School	48.0	48.0	0.0	70.0	None

Cumulative Year 2040 Conditions

This section provides an assessment of the anticipated noise conditions in the future as it relates to the Project and the impact of increased traffic noise generated by the Project on the surrounding land uses within the study area. The noise impacts from the development of the Project was analyzed considering Cumulative Year 2040 Conditions as a result of the Tulare County General Plan. Future development within the planning area will result in increased traffic volumes, thus increasing noise levels in some areas. While there will be increases in some noise levels, efforts can be taken to help minimize such instances. For example, siting noise sensitive uses away from high-noise areas (e.g., major traffic routes) and buffering noise through design will help minimize future noise-related land use conflicts.

The levels of traffic expected in the year 2040 relate to the cumulative effect of traffic increases resulting from the implementation of the general plans of local agencies and pending development projects. Traffic conditions considering the adopted general plan in Tulare County for the Year 2040 were estimated using the Tulare County Association of Governments (TCAG) regional travel model. Traffic volumes, truck mix, and vehicle speeds were used as inputs to the TNM 2.5 model for the Cumulative Year 2040 modeled scenarios consistent with generally-accepted engineering principles and methods.

Table 7 shows the predicted noise levels at the modeled receivers evaluated in the study area for the Cumulative Year 2040 With and Without Project conditions. Results of the analysis show that none of the sensitive receivers will exceed Tulare County's Land Use Compatibility for Community Noise Environments. As a result, the Project will not create a significant impact at sensitive receptors in the study area. Table 7 also shows the increase in noise levels for the Cumulative Year 2040 scenario once Project trips are added to the surrounding roadway system. Results show that the greatest increase in noise levels as a result of the Project is 1 Leq(h) dBA. Section 1.2.1 above indicates that a 3 dB change is considered a just-perceivable difference outside of the laboratory and that a change in level of at least 5 dB is required before any noticeable change in community response would be expected.

It should be noted that the noise levels presented in Table 7 do not account for noise attenuation caused by buildings or tree/shrubs that break the line of sight from the sound source to the receiver. A decibel reduction of 3 to 5 dBA is plausible when buildings or trees/shrubs break the line of sight according to FHWA.

Table 7
Cumulative Year 2040 Noise Levels

Receptor I.D. No.	Type of Development	Cumulative Year 2040 Without Project Noise Level Leq(h) dBA	Cumulative Year 2040 Plus Project Noise Level Leq(h) dBA	Noise Increase (+) or Decrease (-)	Tulare County Noise Standard dBA Ldn	Impact
1	Commercial	68.0	68.0	0.0	70.0	None
2	Residential	53.0	54.0	1.0	60.0	None
3	Residential	56.0	57.0	1.0	60.0	None
4	Residential	59.0	60.0	1.0	60.0	None
5	Residential	58.0	59.0	1.0	60.0	None
6	Residential	58.0	58.0	0.0	60.0	None
7	School	50.0	50.0	0.0	70.0	None

Table 8 shows the traffic noise exposure levels at a setback of 80 feet from the roadway centerline and the distances from the roadway centerline necessary to achieve 60 Leq(h) dBA considering the noise study scenarios.

Table 8
Roadway Segment Noise Levels

Roadway	Segment	Existing Plus Project		Near-Term Without Project		Near-Term Plus Project		Cumulative Year 2040 Without Project		Cumulative Year 2040 Plus Project	
		Noise Level Leq(h) dBA @ 80' Fom Roadway Centerlines	Distance (Feet) to 60 Leq(h) dBA from Roadway Centerline	Noise Level Leq(h) dBA @ 80' Fom Roadway Centerlines	Distance (Feet) to 60 Leq(h) dBA from Roadway Centerline	Noise Level Leq(h) dBA @ 80' Fom Roadway Centerlines	Distance (Feet) to 60 Leq(h) dBA from Roadway Centerline	Noise Level Leq(h) dBA @ 80' Fom Roadway Centerlines	Distance (Feet) to 60 Leq(h) dBA from Roadway Centerline	Noise Level Leq(h) dBA @ 80' Fom Roadway Centerlines	Distance (Feet) to 60 Leq(h) dBA from Roadway Centerline
Deer Creek Drive	Between Road 272 and Road 264	63.0	160	63.0	160	63.0	160	65.0	253	65.0	253
Road 264	Between Deer Creek Drive and Avenue 116	62.0	127	62.0	127	62.0	127	63.0	160	63.0	160
Plano Street	Between Avenue 116 and Avenue 128	59.0	64	57.0	40	59.0	64	59.0	64	60.0	80
Avenue 128	Between Plano Street and SR 65	59.0	64	58.0	50	59.0	64	59.0	64	60.0	80

4.2 Stationary Noise Impacts

Noise sources identified on the Project site are related to surface mining activities, including loaders, excavators, service trucks, water trucks, and dumb trucks importing/hauling material. Table 9 shows the noise levels corresponding to the operation of the equipment that is typically used at the project site. The nearest residence to the proposed expanded mining area is located approximately 450 feet south of the Project site. It should be noted that the land located south, west, and southwest of the property is zoned AE-40, which is an exclusive zone for intensive agricultural uses and for those uses which are necessary and integral part of the agricultural operation. As shown in Table 1, Tulare County's Land Use Compatibility for Community Noise Environments identifies a noise standard of 75 Ldn/CNEL for agricultural land uses, which is the land use that applies to the residential homes located southeast of the project site.

Table 9 also shows the predicted noise generation of the individual on-site noise sources at the nearest residence. In order to determine the cumulative effect of the on-site noise sources, methodology found in Caltrans' Technical Noise Supplement (Appendix C) was used. Based on the decibel addition methodology found in Caltrans' Technical Noise Supplement, it was determined that the noise levels experienced at the nearest residence is approximately 73 dBA, if all equipment is operating at the same time in the same activity area. Therefore, on-site operations from the Project have a less than significant impact on the nearest residence south of the Property's boundary. It is doubtful that all of the noise sources presented in Table 10 will be operating at the same time in the same activity area.

Table 9
Project On-Site Noise Sources

Noise Source	Sound Levels Measured (dBA at 100 feet)	Sound Levels at nearest residence, approximately 450 feet south of Project boundary (dBA) [4]
Excavation	67 [1]	54
Rock Drills	79 [2]	66
Processing Plant	83 [3]	70
Front-End Loader	74 [2]	61
Trucks	78 [2]	65

[1] Reference measurement data from "Woolstenhulme Ranch Noise Impact Assessment", Merced County, California. Prepared by RGP Planning & Development Services, July 1999.

[2] Noise Control for Buildings and Manufacturing Plants (Bolt, Beranek and Newman, 1987).

[3] Reference measurement data from "Noise Assessment for the Horowitz Quarry", Riverside County, California. Prepared by Mestre Greve Associates, August 1990.

[4] Determined from sound levels at 100 feet and noise attenuation due to distance

Mine Safety and Health Administration - MSHA

The Mine Safety and Health Administration (MSHA) has established a Noise Exposure Standard for the purposes of reducing the long-term effects of noise for mining related activities. The National Institute for Occupational Safety and Health (NIOSH) has identified occupational noise-induced hearing loss as one of the ten leading work-related diseases and injuries. MSHA estimated that 13% of the mining population of the United States would develop material hearing impairment during their working lifetime under the previous noise standards. The noise exposure standards established by MSHA applies to all mine operators, both coal and metal and nonmetal, underground and surface operations.

Section 62.120 of the Noise Exposure Standard requires that if a miner's noise exposure equals or exceeds the "action level" during any work shift, the business/company is required to enroll the miner in a "hearing conservation program" (HCP) that complies with Section 62.150. This "action level" is identical to what is being used by Occupational Safety and Health Administration's (OSHA) in its hearing conservation amendment, and results in uniform enforcement levels in both general industry and the mining industry. The Permissible Exposure Level (PEL) is defined as an 8-hour time-weighted average sound level of 90 dBA integrating all sound levels from at least 90 dBA to at least 140 dBA. A miner may not be exposed at any time to sound levels exceeding 115 dBA, even if the miner is wearing hearing protectors.

The Project will expose workers to noise levels of 85 to 110 dBA based upon information provided in Table 9 above. In order to comply with the MSHA standard, the Project may establish a system of monitoring that evaluates each miner's noise exposure sufficiently to determine continuing compliance with the MSHA rule.

5.0 Impact Determinations and Recommended Mitigation

In accordance with CEQA, the effects of a project are evaluated to determine if they will result in significant adverse impacts on the environment. The criteria used to determine the significance of a noise impact are based on the following thresholds of significance, which come from Appendix G of the CEQA Guidelines. Accordingly, noise impacts resulting from the Project are considered significant if the Project would result in:

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

b) Generation of excessive ground-borne vibration or ground-borne noise levels?

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

Each of these thresholds are evaluated individually below to determine whether the Project will cause a significant effect on the environment. Where impacts are found to be significant, mitigation measures are recommended that would avoid or reduce the impact to less than significant.

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

5.1.1 Short-Term Impacts

There are no construction activities associated with the Project's request to increase annual production from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year.

5.1.2 Long-Term Impacts

Traffic Noise

Tables 7, 8, and 9 show the predicted noise levels at sensitive receivers in the study area as a result of adding traffic associated with the Project. Results of the analysis show that none of the sensitive receivers will exceed the Tulare County's Land Use Compatibility for Community Noise Environments criteria for the Existing Plus Project, Near-Term, and Cumulative Year 2040 scenarios. As a result, Project traffic will not create a significant impact at sensitive receptors in the study area. The Project generates an increase of 1 dB or less with the addition of Project traffic to the surrounding roadway network considering the Cumulative Year 2040 scenario. Implementation of the Project will not result in significant adverse impacts from traffic noise levels within the Project study area. Therefore, no mitigation measures are needed.

Stationary Noise

Section 4.2 above indicates that noise levels experienced at the nearest residence as a result of the Project is approximately 73 dBA, if all equipment is operating at the same time in the same activity area. Therefore, on-site operations from the Project have a less than significant impact on the nearest residence south of the Property's boundary considering Tulare County's Land Use Compatibility for Community Noise Environments.

5.2 Generation of excessive ground-borne vibration or ground-borne noise levels?

Surface mining activities can result in ground vibration, depending upon the types of equipment used. Operation of on-site equipment causes ground vibrations which spread through the ground and diminish in strength with distance from the source generating the vibration. Building structures that are founded on the soil in the vicinity of the site respond to these vibrations, with varied results. Ground vibrations as a result of site activities very rarely reach vibration levels that will damage structures but can cause low rumbling sounds and feelable vibrations for buildings very close to the site. Project site activities that generally create the most severe vibrations are blasting and impact pile driving.

Ambient vibration levels in residential areas are typically 50 VdB, which is well below human perception. The operation of heating/air conditioning systems and slamming of doors produce typical indoor vibrations that are noticeable to humans. The most common exterior sources of ground vibration that can be noticeable to humans inside residences include constructions activities, train operations, and street traffic.

The nearest residence to the proposed expanded mining area is located approximately 450 feet south of the Project site. Using the highest vibration level shown in Table 4 (L_v 87) and the

formula shown above, the anticipated vibration level at the nearest residence is 62 VdB. As a result, mining activity related vibration from the proposed Project is considered less than significant.

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

The Project is not located within the vicinity of a private airstrip or an airport land use plan or within two miles of a public airport or public use airport. The Porterville Municipal Airport is the closest public airport and is located approximately 5.5 miles northwest of the Project site. Therefore, the Project will not result in the stated impact. No Mitigation is needed.

APPENDIX A
Acoustical Terminology

ACOUSTICAL TERMINOLOGY

The following terminology has been used for purposes of this NSR:

Ambient Noise Level: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7 p.m. to 10p.m. and ten decibels to sound levels in the night before 7 a.m. and after 10 p.m.

Decibel, dBA: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micro-newtons per square meter).

DNL/L_{dn}: Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition often decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq}: Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

L_{eq}(h): The hourly value of $L_{eq.}$

L_{max}: The maximum noise level recorded during a noise event

L_n: The sound level exceeded "n" percent of the time during a sample interval (L_{90}, L_{50}, L_{10}, etc.). L_{10} equals the level exceeded 10 percent of the time.

L_n(h): The hourly value of L_n.

Noise Exposure Contours: Lines drawn about a noise source indicating constant levels

of noise exposure. CNEL and DNL contours are frequently utilized to describe community exposure to noise.

SEL or SENEL: Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to the duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and the reference duration of one second

Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighing filter network. The A-weighing filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

Note: *CNEL and DNL represent daily levels of noise exposure averaged on an annual basis,* while L_n *represents the average noise exposure for a shorter time period, typically one hour.*

APPENDIX B

TNM 2.5 Sound Level Worksheets

Tulare County
VRPA Technologies, Inc.

12 April 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Deer Creek Rock Co.
RUN: Existing Plus Project Conditions
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	66.2	70	66.2	10	----	66.2	0.0	8	-8.0
Receiver2	2	1	0.0	52.9	60	52.9	10	----	52.9	0.0	8	-8.0
Receiver3	4	1	0.0	55.7	60	55.7	10	----	55.7	0.0	8	-8.0
Receiver4	5	1	0.0	59.5	60	59.5	10	----	59.5	0.0	8	-8.0
Receiver5	6	1	0.0	57.4	60	57.4	10	----	57.4	0.0	8	-8.0
Receiver6	7	1	0.0	55.8	60	55.8	10	----	55.8	0.0	8	-8.0
Receiver7	8	1	0.0	48.3	70	48.3	10	----	48.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	7	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Tulare County
VRPA Technologies, Inc.

12 April 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Deer Creek Rock Co.
RUN: NT Without Project Conditions
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	65.8	70	65.8	10	----	65.8	0.0	8	-8.0
Receiver2	2	1	0.0	51.5	60	51.5	10	----	51.5	0.0	8	-8.0
Receiver3	4	1	0.0	54.4	60	54.4	10	----	54.4	0.0	8	-8.0
Receiver4	5	1	0.0	58.2	60	58.2	10	----	58.2	0.0	8	-8.0
Receiver5	6	1	0.0	56.8	60	56.8	10	----	56.8	0.0	8	-8.0
Receiver6	7	1	0.0	55.4	60	55.4	10	----	55.4	0.0	8	-8.0
Receiver7	8	1	0.0	47.9	70	47.9	10	----	47.9	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	7	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Tulare County
VRPA Technologies, Inc.

12 April 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Deer Creek Rock Co.
RUN: NT Plus Project Conditions
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	66.3	70	66.3	10	----	66.3	0.0	8	-8.0
Receiver2	2	1	0.0	52.9	60	52.9	10	----	52.9	0.0	8	-8.0
Receiver3	4	1	0.0	55.8	60	55.8	10	----	55.8	0.0	8	-8.0
Receiver4	5	1	0.0	59.6	60	59.6	10	----	59.6	0.0	8	-8.0
Receiver5	6	1	0.0	57.4	60	57.4	10	----	57.4	0.0	8	-8.0
Receiver6	7	1	0.0	55.9	60	55.9	10	----	55.9	0.0	8	-8.0
Receiver7	8	1	0.0	48.4	70	48.4	10	----	48.4	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	7	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Tulare County
VRPA Technologies, Inc.

12 April 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Deer Creek Rock Co.
RUN: CY 2040 W/Out Project Conditions
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	68.0	70	68.0	10	----	68.0	0.0	8	-8.0
Receiver2	2	1	0.0	52.8	60	52.8	10	----	52.8	0.0	8	-8.0
Receiver3	4	1	0.0	55.6	60	55.6	10	----	55.6	0.0	8	-8.0
Receiver4	5	1	0.0	59.4	60	59.4	10	----	59.4	0.0	8	-8.0
Receiver5	6	1	0.0	58.1	60	58.1	10	----	58.1	0.0	8	-8.0
Receiver6	7	1	0.0	57.6	60	57.6	10	----	57.6	0.0	8	-8.0
Receiver7	8	1	0.0	50.1	70	50.1	10	----	50.1	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	7	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Tulare County
VRPA Technologies, Inc.

12 April 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Deer Creek Rock Co.
RUN: CY 2040 Plus Project Conditions
BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

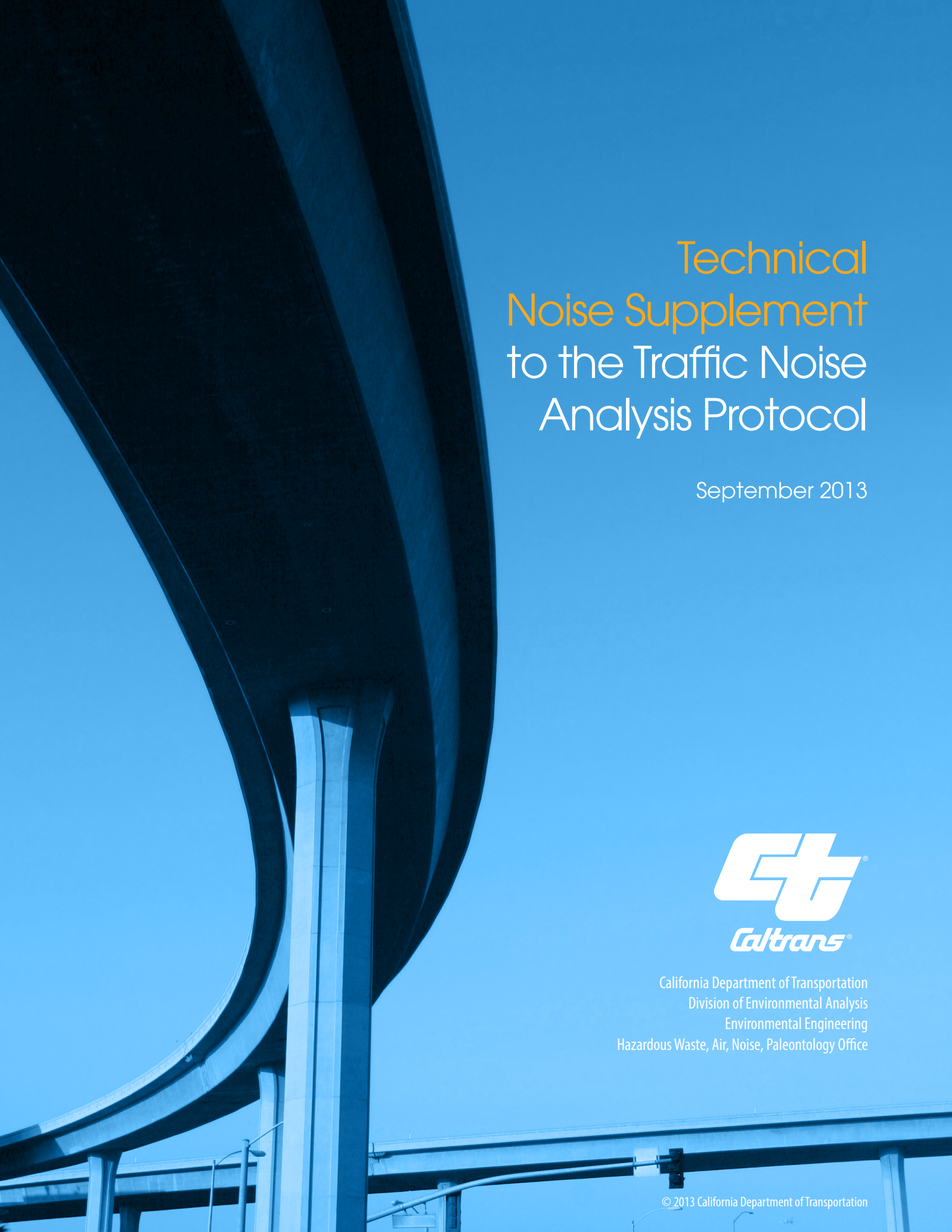
ATMOSPHERICS: 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	68.3	70	68.3	10	----	68.3	0.0	8	-8.0
Receiver2	2	1	0.0	53.9	60	53.9	10	----	53.9	0.0	8	-8.0
Receiver3	4	1	0.0	56.7	60	56.7	10	----	56.7	0.0	8	-8.0
Receiver4	5	1	0.0	60.5	60	60.5	10	Snd Lvl	60.5	0.0	8	-8.0
Receiver5	6	1	0.0	58.6	60	58.6	10	----	58.6	0.0	8	-8.0
Receiver6	7	1	0.0	57.9	60	57.9	10	----	57.9	0.0	8	-8.0
Receiver7	8	1	0.0	50.3	70	50.3	10	----	50.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	7	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

APPENDIX C

Caltrans' Technical Noise Supplement



Technical Noise Supplement to the Traffic Noise Analysis Protocol

September 2013

California Department of Transportation
Division of Environmental Analysis
Environmental Engineering
Hazardous Waste, Air, Noise, Paleontology Office

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2.1.3.8 White and Pink Noise

White noise is noise with a special frequency spectrum that has the same amplitude (level) for each frequency interval over the entire audible frequency spectrum. It is often generated in laboratories for calibrating sound level measuring equipment, specifically its frequency response. One might expect that the octave or one-third-octave band spectrum of white noise would be a straight line, but this is not true. Beginning with the lowest audible octave, each subsequent octave spans twice as many frequencies than the previous ones, and therefore contains twice the energy. This corresponds with a 3-dB step increase for each octave band, and 1 dB for each one-third-octave band.

Pink noise, in contrast, is defined as having the same amplitude for each octave band (or one-third-octave band), rather than for each frequency interval. Its octave or one-third-octave band spectrum is truly a straight "level" line over the entire audible spectrum. Therefore, pink noise generators are conveniently used to calibrate octave or one-third-octave band analyzers.

Both white and pink noise sound somewhat like the static heard from a radio that is not tuned to a particular station.

2.1.4 Sound Propagation

From the source to receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on the following important factors.

- Geometric spreading from point and line sources.
- Ground absorption.
- Atmospheric effects and refraction.
- Shielding by natural and manmade features, noise barriers, diffraction, and reflection.

2.1.4.1 Geometric Spreading from Point and Line Sources

Sound from a small localized source (approximating a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates or drops off at a rate of

6 dBA for each doubling of the distance (6 dBA/DD). This decrease, resulting from the geometric spreading of the energy over an ever-increasing area, is referred to as the inverse square law. Doubling the distance increases each unit area, represented by squares with sides "a" in Figure 2-7, from a^2 to $4a^2$.

Because the same amount of energy passes through both squares, the energy per unit area at 2D is reduced four times from that at distance D. Therefore, for a point source the energy per unit area is inversely proportional to the square of the distance. Taking $10\log_{10}(1/4)$ results in a 6-dBA/DD reduction. This is the point source attenuation rate for geometric spreading.

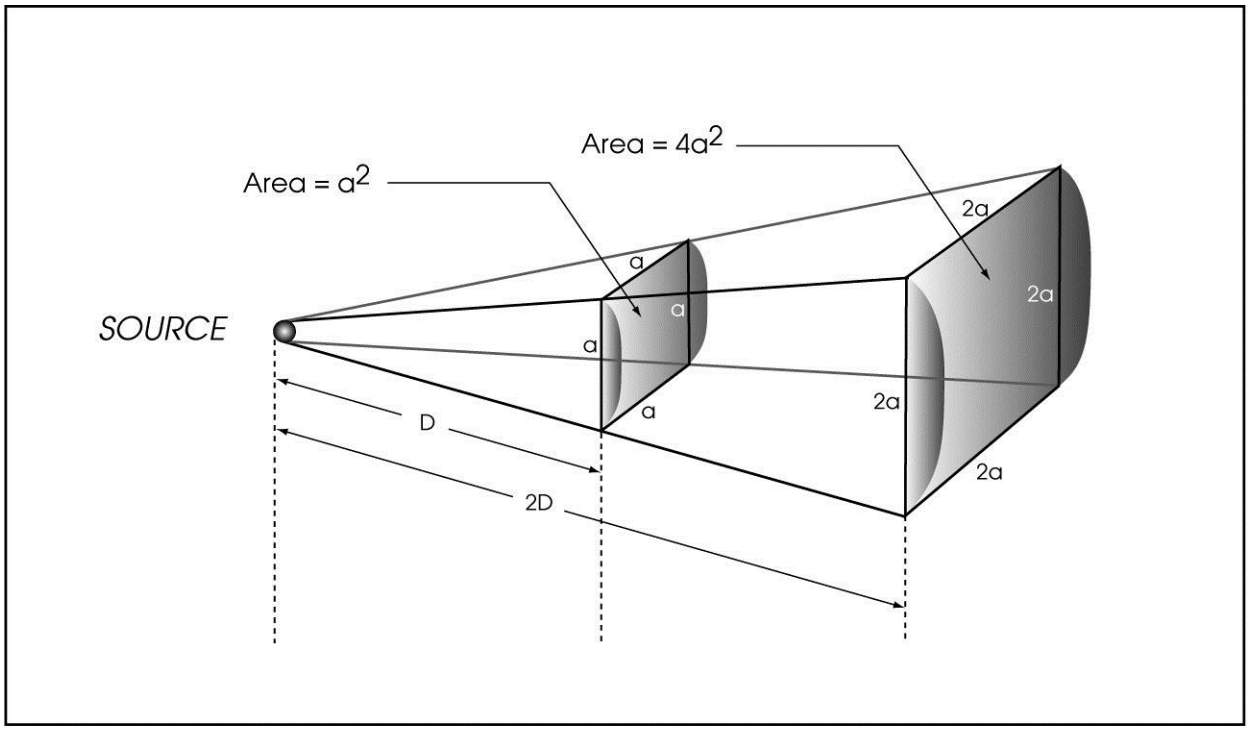

Figure 2-7. Point Source Propagation (Spherical Spreading)

As seen in Figure 2-8, based on the inverse square law the change in noise level between any two distances because of spherical spreading can be found using the following equation:

$$dBA_2 = dBA_1 + 10\log_{10}[(D_1/D_2)]^2 = dBA_1 + 20\log_{10}(D_1/D_2) \qquad \textbf{(2-13)}$$

Where:

dBA_1 = noise level at distance D_1

dBA_2 = noise level at distance D_2

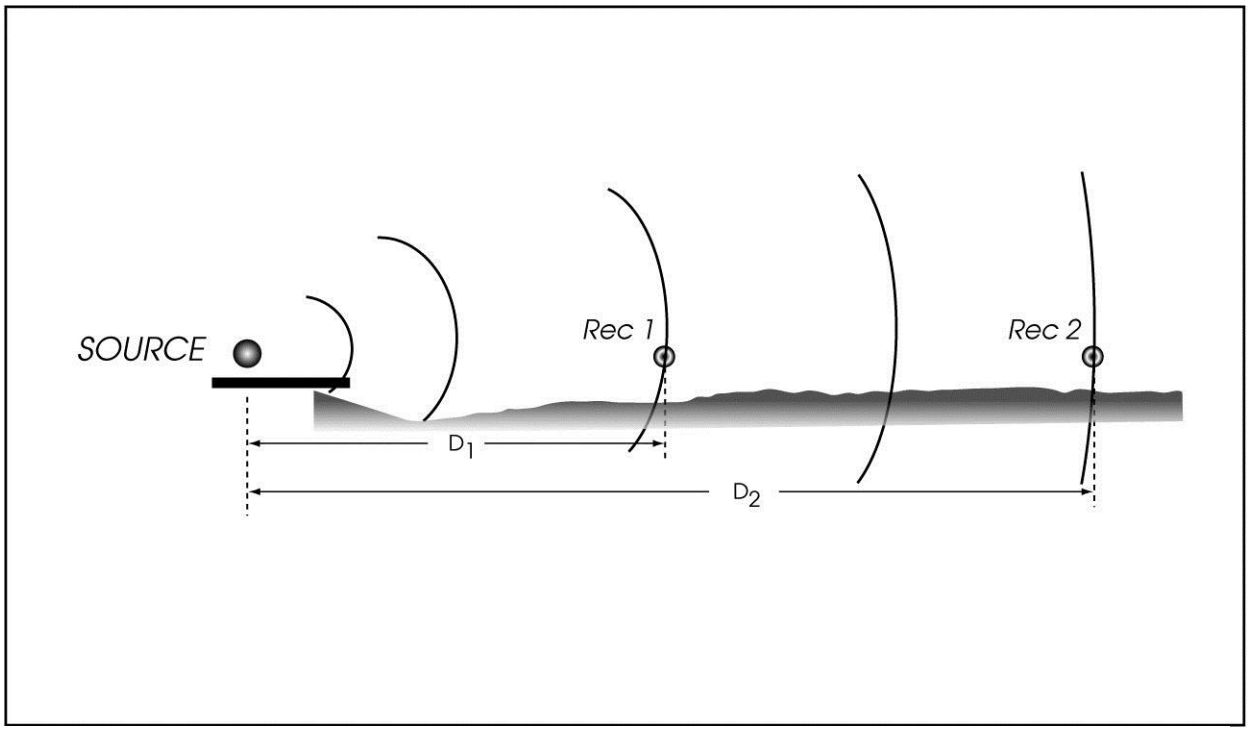

Figure 2-8. Change in Noise Level with Distance from Spherical Spreading

However, highway traffic noise is not a single, stationary point source. The movement of the vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over a time interval (Figure 2-9). This results in cylindrical spreading rather than spherical spreading. Because the change in surface area of a cylinder only increases by two times for each doubling of the radius instead of the four times associated with spheres, the change in sound level is 3 dBA/DD. The change in noise levels for a line source at any two different distances from cylindrical spreading is determined using the following equation:

$$dBA_2 = dBA_1 + 10\log_{10}(D_1/D_2) \quad \textbf{(2-14)}$$

Where:

dBA_1 = noise level at distance D_1 and conventionally the known noise level

dBA_2 = noise level at distance D_2 and conventionally the unknown noise level

Note

The expression $10\log_{10}(D_1/D_2)$ is negative when D_2 is more than D_1 and positive when D_1 is more than D_2. Therefore, the equation automatically accounts for the receiver being farther or closer with respect to the source—$\log_{10}$ of a number less than 1 gives a negative result, $\log_{10}$ of a number more than 1 is positive, and $\log_{10}(1) = 0$.

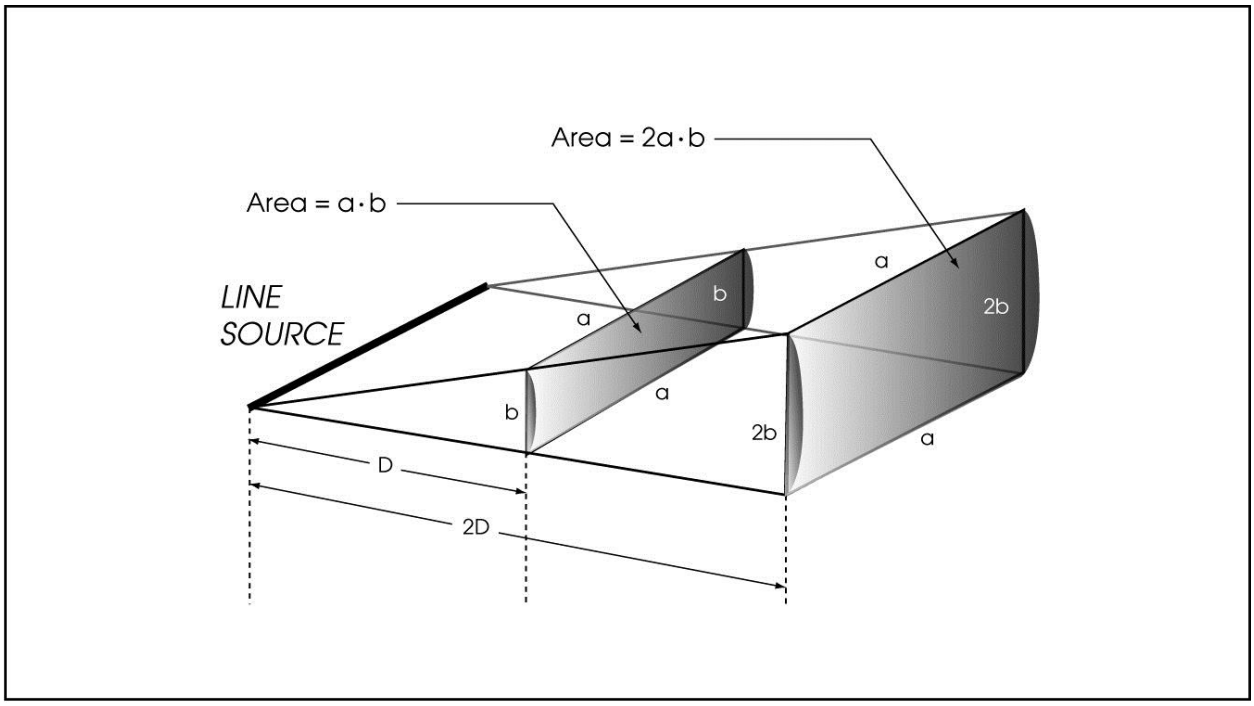

Figure 2-9. Line Source Propagation (Cylindrical Spreading)

2.1.4.2 Ground Absorption

Most often, the noise path between the highway and observer is very close to the ground. Noise attenuation from ground absorption and reflective wave cancellation adds to the attenuation from geometric spreading. Traditionally, this excess attenuation has been expressed in terms of decibels of attenuation per doubling of distance. This approximation is done for simplification only; for distances of less than 200 feet, the prediction results based on this scheme are sufficiently accurate. The sum of the geometric spreading attenuation and excess ground attenuation (if any) is referred to as the attenuation or dropoff rate. For distances of 200 feet or more, the approximation causes excessive inaccuracies in predictions. The amount of excess ground attenuation depends on the height of the noise path and characteristics of the intervening ground or site. In practice, excess ground attenuation may vary from 0 to 8–10 dBA/DD or more. In fact, it varies as the noise path height changes from the source to receiver and with vehicle type because the source heights are different. The complexity of terrain also influences the propagation of sound by potentially increasing the number of ground reflections.

The FHWA TNM is the model that is currently approved by FHWA for use in noise impact studies. The TNM has complex algorithms that directly calculate excess ground attenuation based on ground type and site geometry.

Section 5

Noise Barrier Design Considerations

The primary function of highway noise barriers is to shield receivers from excessive noise generated by highway traffic. Although there are other strategies for attenuating transportation-related noise, noise barriers are the most common noise attenuation option used by Caltrans.

Many factors need to be considered in the proper design of noise barriers. First, barriers must be acoustically adequate. They must reduce the noise as described by policies or standards. Acoustical design considerations include barrier material, locations, dimensions, shapes, and background noise levels. Acoustical considerations, however, are not the only factors leading to proper design of noise barriers.

A second set of design considerations, collectively labeled non-acoustical design considerations, is equally important. Noise barriers can have secondary effects related to security in surrounding areas, aesthetics, community continuity, and other non-acoustical factors. With appropriate planning and design these potential effects from noise barriers can be reduced or avoided.

The current edition of the *Highway Design Manual* Chapter 1100 should be consulted for specific noise barrier design criteria. Because these may change in the future, the discussion in this section will focus on general applications and consequences of the design criteria, not on the criteria themselves. The Caltrans Headquarters Division of Environmental Analysis should be consulted for the latest status.

The acoustical and non-acoustical design considerations in this section conform to the *FHWA Highway Noise Barrier Design Handbook* (Fleming et al. 2011).

5.1 Acoustical Design Considerations

The FHWA TNM described in Section 4 is used for determining proper heights and lengths of noise barriers. The models assume that the noise

barriers do not transmit any sound through the barrier. Only the noise diffracted by the barrier and any unshielded segments are considered. Therefore, the material of the barrier must be sufficiently dense or thick to ensure that the sound transmission through the barrier will not contribute to the total noise level calculated by the model at the receiver.

The material, location, dimensions, and shape of a noise barrier all affect its acoustical performance. The various effects associated with these factors are discussed in Sections 2 and 4.5.

Figure 5-1 is a simplified sketch showing what happens to vehicle noise when a noise barrier is placed between the source and receiver. The original straight path from the source to receiver is now interrupted by the barrier. Depending on the barrier material and surface treatment, a portion of the original noise energy is reflected or scattered back toward the source. Another portion is absorbed by the material of the barrier, and another is transmitted through the barrier. The reflected (scattered) and absorbed noise paths never reach the receiver.

The transmitted noise continues on to the receiver with a loss of acoustical energy (redirected and some converted into heat). The common logarithm of energy ratios of the noise in front of the barrier and behind the barrier, expressed in decibels, is the TL. The TL of a barrier depends on the barrier material, primarily its weight, and the frequency spectrum of the noise source.

The transmitted noise is not the only noise from the source reaching the receiver. The straight line noise path from the source to the top of the barrier, originally destined in the direction of “A” without the barrier, now is diffracted downward toward the receiver (Figure 5-2). This process also results in a loss of acoustical energy.

Therefore, the receiver is exposed to both the transmitted and diffracted noise. Whereas the transmitted noise only depends on barrier material properties, the diffracted noise depends on the location, shape, and dimensions of the barrier. These factors will be discussed in the following sections.

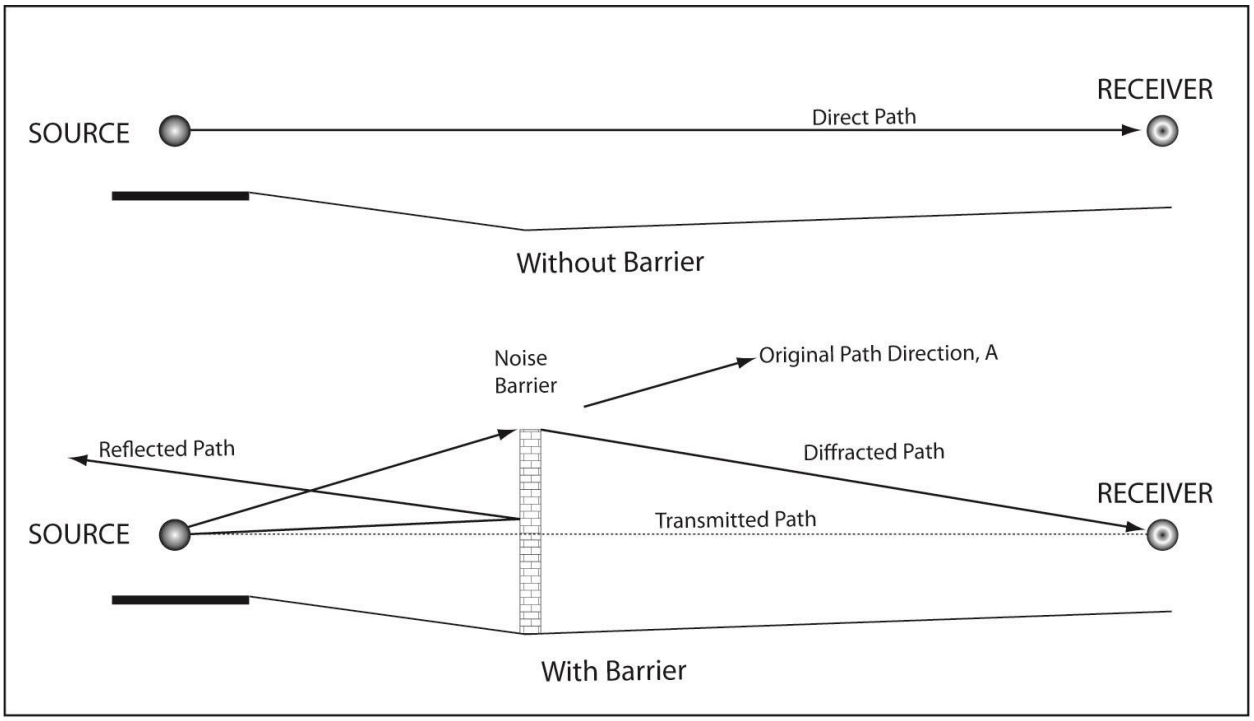

Figure 5-1. Alteration of Noise Paths by a Noise Barrier

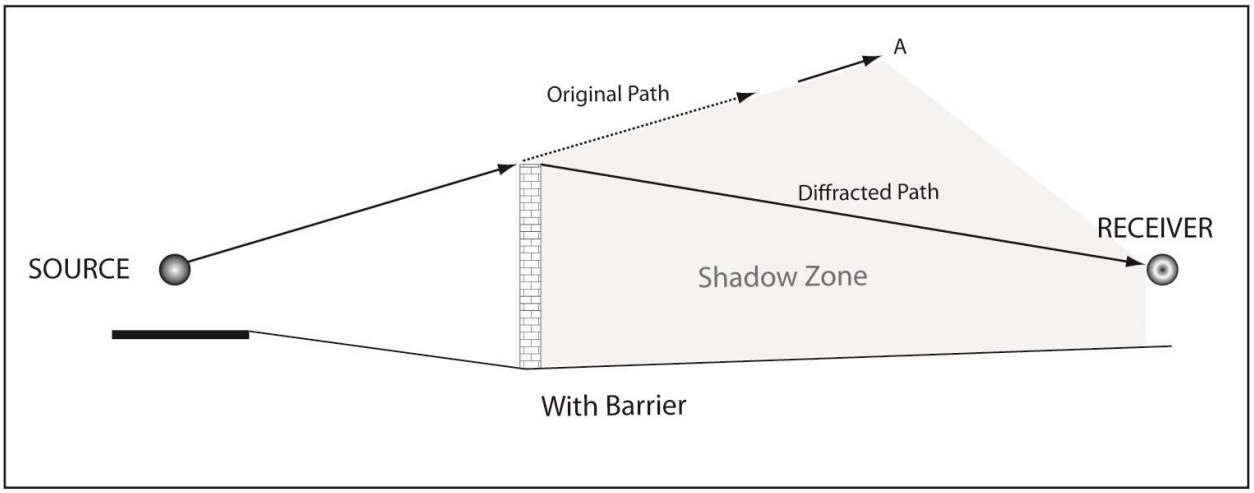

Figure 5-2. Barrier Diffraction

5.1.1 Barrier Material and Transmission Loss

For acoustical purposes, any material may be used for a barrier between a noise source and a noise receiver as long as it has a TL of at least 10 dBA more than the desired noise reduction. This ensures that the only noise path to be considered in the acoustical design of a noise barrier is the

diffracted noise path. For example, if a noise barrier is designed to reduce the noise level at a receiver by 8 dBA, the TL of the barrier must be at least 18 dBA. The transmitted noise may then be ignored because the diffracted noise is at least 10 dBA more.

As a general rule, any material weighing 4 pounds per square foot or more has a transmission loss of at least 20 dBA. Such material would be adequate for a noise reduction of at least 10 dBA due to diffraction. Please note that this weight can be attained by a variety of material types. The denser a material is, the thinner it may be. TL also depends on the stiffness of the barrier material and frequency of the source.

In general the maximum noise reduction that can be achieved from a barrier is about 20 dBA for thin screens (walls) and 23 dBA for berms. Therefore, a material that has a TL of 33 dBA (23 + 10) or more would be adequate for a noise barrier in most situations.

Table 5-1 gives approximate TL values for some common materials, tested for typical A-weighted traffic frequency spectra. They may be used as a rough guide in acoustical design of noise barriers. For accurate values, material test reports by accredited laboratories should be consulted. These product specifications can usually be provided by the manufacturer.

Table 5-1. Approximate Transmission Loss Values for Common Materials

Material	Thickness (Inches)	Weight (Pounds per Square Foot)	Transmission Loss (dBA)
Concrete block, 8 by 8 by 16 inches, light weight	8	31	34
Dense concrete	4	50	40
Light concrete	6	50	39
Light concrete	4	33	36
Steel, 18 gage	0.050	2.00	25
Steel, 20 gage	0.0375	1.50	22
Steel, 22 gage	0.0312	1.25	20
Steel, 24 gage	0.025	1.00	18
Aluminum, sheet	0.0625	0.9	23
Aluminum, sheet	0.125	1.8	25
Aluminum, sheet	0.25	3.5	27
Wood, fir	0.5	1.7	18
Wood, fir	1	3.3	21
Wood, fir	2	6.7	24

Material	Thickness (Inches)	Weight (Pounds per Square Foot)	Transmission Loss (dBA)
Plywood	0.5	1.7	20
Plywood	1	3.3	23
Glass, safety	0.125	1.6	22
Plexiglas	0.25	1.5	22

Table 5-1 assumes no openings or gaps in the barrier material. However, some materials such as wood are prone to develop openings or gaps because of shrinkage, warping, splitting, or weathering. These openings decrease the TL values. The TL of a barrier material with openings can be calculated if the ratio of area of openings to total barrier area and TL of the material are known. The following formula can be used to calculate the transmission loss with the openings (TL_o):

$$TL_o = TL - 10\log_{10}(A_o * 10^{TL/10} + A_c) \quad \textbf{(5-1)}$$

Where:

TL_o = transmission loss of material with openings

TL = transmission loss of material without openings

A_o = area of openings as a fraction of the total area of the barrier

A_c = area of closed portion as a fraction of the total area of the barrier = $1 - A_o$

This method of calculation assumes that the openings or gaps are distributed uniformly over the surface of a barrier. For example, a barrier made of 2-inch-thick fir planks has openings that make up about 5% of the total area and are about equally distributed. The transmission loss of the material with these gaps can then be determined. From Table 5-1, the TL for 2-inch fir is 24 dBA. A_o is 5%, or 0.05; A_c is 1 – 0.05 = 0.95. Therefore:

$$TL_o = 24 - 10\log_{10}(0.05 * 10^{2.4} + 0.95) = \textbf{12.7, or about 13 dBA}$$

The reduced TL could affect the barrier's performance. For example, it is assumed that before the barrier the noise level was 75 dBA and the intention was to reduce noise levels by 10 dBA (i.e., the diffracted noise was to be 65 dBA, and the transmitted noise was to be 75 – 24 = 51 dBA). The total noise level would have been 65 + 51 = 65 dBA. With the gaps, however, the transmitted noise is now 75 – 13 = 62 dBA, and the total noise level is 65 + 62 = 66.8 dBA. The effectiveness of the barrier is reduced by almost 2 dBA. Instead of a designed noise reduction of 10 dBA, an actual noise reduction of only 8 dBA will be realized in this case.

Properly treated materials will reduce or eliminate noise leakage. For example, lumber should be treated with preservatives that provide proper penetration and do not interfere with any protective coatings (e.g., paint) to be applied later. The wood also should have a low moisture content, requiring kiln drying after waterborne preservatives have been used. Wood planks should have tongue-and-groove deep enough to allow for shrinkage without gaps to maintain a high TL. Such tongue-and-groove is usually non-standard.

Several other ratings are used to express the ability of materials in specific construction configurations to resist sound transmission. Two of these are the Sound Transmission Class (STC) and Exterior Wall Noise Rating (EWNR). Both are most often used in conjunction with indoor acoustics.

STC is universally accepted by architects and engineers. The rating uses a standard contour against which the TL values in one-third-octave bands are compared in the frequency range between 125 and 4,000 Hz. The standard contour is moved up or down relative to the test curve until the sum of the differences between them is 32 dB or less, and the maximum difference at each one-third-octave center frequency is no more than 8 dB. The STC is the TL value of the standard contour at the 500-Hz center frequency.

The disadvantage of this rating scheme is that it is designed to rate noise reductions in frequencies of normal office and speech noises, not for the lower frequencies of highway traffic noise. The STC can still be used as a rough guide, but it should be pointed out that for frequencies of average traffic conditions, the STC is 5 to 10 dBA more than the TL. For example, material with an STC rating of 35 has a TL of about 25 to 30 dBA for traffic noise.

The EWNR rating scheme is different from the STC in that it uses a standard contour developed from typical highway noise frequencies. Therefore, it agrees closely with the A-weighted TL for traffic noise. The FHWA *Highway Traffic Noise: Analysis and Abatement Guidance* (Federal Highway Administration 2011) provides further useful information for calculating outdoor to indoor traffic noise reductions.

5.1.2 Barrier Location

The previous section indicated that by selecting materials with sufficient TL, noise transmitted through a barrier may be ignored because its contribution to the total noise level is negligible. The only remaining noise of concern is diffracted noise. Sections 2 and 4 discuss the basics of diffraction and barrier attenuation. The principal factor determining barrier

APPENDIX "G"

TRAFFIC IMPACT STUDY

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Deer Creek Rock Co., Inc. Expansion Project

Traffic Impact Study
April 2019

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Deer Creek Rock Co., Inc. Expansion Project
Traffic Impact Study

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Executive Summary

This Traffic Impact Study (TIS) has been prepared for the purpose of analyzing traffic conditions related to the Deer Creek Rock Expansion (Project). The Project seeks an expansion of the existing Deer Creek Rock Co., Inc. site located in Tulare County. The Project is located south of Avenue 120 (Deer Creek Drive) approximately 1/2 mile east of Road 272 along the south bank of Deer Creek. The Applicant is requesting an increase in annual production of 500,000 tons per year (from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year) which will generate an additional 224 round trips per day.

IMPACTS

Intersections

Table E-1 shows intersections that are expected to fall short of desirable operating conditions for various scenarios. Results of the analysis show that the Project will contribute to an unacceptable LOS at the intersection of SR 65 and Avenue 128 when comparing the Cumulative Year 2040 Without Project and Cumulative Year 2040 Plus Project scenarios. Potential mitigation measures are discussed below.

Segments

Results of the segment analysis along the existing street and highway system are reflected in Table E-2. The performance criteria used for evaluating volumes and capacities on the road and highway system for this study were estimated using the Modified Arterial Level of Service Tables included in Appendix A. Results of the analysis show that all of the study roadway segments are projected to operate at acceptable levels of service through the year 2040.

Table E-1
Intersection Operations

INTERSECTION	CONTROL	TARGET LOS	PEAK HOUR	EXISTING		EXISTING PLUS PROJECT		NEAR-TERM WITHOUT PROJECT		NEAR-TERM PLUS PROJECT		CUMULATIVE YEAR 2040 WITHOUT PROJECT		CUMULATIVE YEAR 2040 PLUS PROJECT	
				DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS
1. SR 65 / Avenue 128	Signalized	C	AM	28.2	C	29.7	C	28.6	C	30.2	C	**43.6**	**D**	**47.9**	**D**
			PM	28.9	C	30.6	C	29.3	C	31.1	C	**43.7**	**D**	**47.5**	**D**
2. Plano Street / Avenue 128	All-Way Stop Sign	D	AM	11.8	B	13.0	B	12.0	B	13.1	B	20.6	C	24.3	C
			PM	9.9	A	10.5	B	10.0	A	10.6	B	13.0	B	14.5	B
3. Road 264 / Avenue 116	One-Way Stop Sign	D	AM	9.8	A	10.2	B	9.9	A	10.3	B	10.7	B	11.3	B
			PM	9.7	A	10.1	B	9.8	A	10.1	B	10.5	B	11.0	B
4. Road 264 / Deer Creek Drive	Two-Way Stop Sign	D	AM	10.3	B	10.9	B	10.3	B	10.9	B	11.3	B	12.1	B
			PM	9.5	A	10.0	B	9.5	A	10.0	B	10.0	B	10.6	B
5. Road 272 / Deer Creek Drive	One-Way Stop Sign	D	AM	10.1	B	10.6	B	10.2	B	10.7	B	11.1	B	11.7	B
			PM	10.0	B	10.7	B	10.0	B	10.7	B	10.7	B	11.6	B
6. Project Access / Deer Creek Drive	One-Way Stop Sign	D	AM	9.2	A	9.7	A	9.2	A	9.7	A	9.3	A	9.7	A
			PM	9.6	A	10.3	B	9.6	A	10.3	B	9.6	A	10.4	B

DELAY is measured in seconds
LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded
For signalized and all-way stop controlled intersections, delay results show the average for the entire intersection.
For one-way and two-way stop controlled intersections, delay results show the delay for the worst movement.

Table E-2
Segment Operations

STREET SEGMENT	SEGMENT DESCRIPTION	DIRECTION	TARGET LOS	PEAK HOUR	EXISTING		EXISTING PLUS PROJECT		NEAR-TERM WITHOUT PROJECT		NEAR-TERM PLUS PROJECT		CUMULATIVE YEAR 2040 WITHOUT PROJECT		CUMULATIVE YEAR 2040 PLUS PROJECT	
					VOLUME	LOS	VOLUME	LOS	VOLUME	LOS	VOLUME	LOS	VOLUME	LOS	VOLUME	LOS
Avenue 128																
SR 65 to Plano Street	2 Lanes Undivided	EB	D	AM	247	B	272	B	253	B	278	B	415	B	440	B
				PM	233	B	258	B	239	B	264	B	391	B	417	B
		WB		AM	256	B	281	B	262	B	288	B	430	B	455	B
				PM	237	B	262	B	243	B	268	B	398	B	423	B
Plano Street - Avenue 116																
Avenue 128 to Road 264	2 Lanes Undivided	NB / WB	D	AM	159	B	184	B	161	B	187	B	217	B	243	B
				PM	175	B	200	B	178	B	203	B	239	B	264	B
		SB / EB		AM	141	B	166	B	143	B	168	B	193	B	218	B
				PM	151	B	176	B	153	B	178	B	206	B	232	B
Road 264																
Deer Creek Drive and Avenue 116	2 Lanes Undivided	NB	D	AM	72	B	100	B	73	B	101	B	98	B	126	B
				PM	60	B	88	B	61	B	89	B	82	B	110	B
		SB		AM	60	B	88	B	61	B	89	B	82	B	110	B
				PM	65	B	93	B	66	B	94	B	89	B	117	B
Deer Creek Drive																
Road 264 to Road 272	2 Lanes Undivided	EB	D	AM	118	B	146	B	120	B	148	B	161	B	189	B
				PM	64	B	92	B	65	B	93	B	87	B	115	B
		WB		AM	64	B	92	B	65	B	93	B	87	B	115	B
				PM	77	B	105	B	78	B	106	B	105	B	133	B
Road 272 to Project Access	2 Lanes Undivided	EB	D	AM	75	B	103	B	76	B	104	B	103	B	131	B
				PM	62	B	90	B	63	B	91	B	85	B	113	B
		WB		AM	62	B	90	B	63	B	91	B	85	B	113	B
				PM	71	B	99	B	72	B	100	B	97	B	125	B

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

MITIGATION

This section describes potential improvements to mitigate the traffic impacts of the Project. Described below are potential improvements at study area intersections for various scenarios. The proposed Project will be required to contribute a fair-share towards the costs of improvements that are identified for the Cumulative Year 2040 scenarios.

Recommended Improvements

Intersections

✓ <u>SR 65 at Avenue 128</u>

Recommended improvements to achieve acceptable levels of service:

- Cumulative Year 2040 Without Project and Plus Project scenarios:
  - Widen the westbound approach to 1 left turn lane, 1 through lane, and 1 right turn lane with overlap phasing (adding 1 right turn)

The improvements identified above for the Cumulative Year 2040 Without Project and Plus Project scenarios are sufficient to meet the existing Measures of Effectiveness (MOE) of the intersection.

Post-Mitigation Level of Service

The level of service resulting from the potential improvements identified above is shown in Table E-3 for study area intersections.

Table E-3
Intersection Operations with Mitigation

INTERSECTION	CONTROL	TARGET LOS	PEAK HOUR	CUMULATIVE YEAR 2040 WITHOUT PROJECT		CUMULATIVE YEAR 2040 PLUS PROJECT	
				DELAY	LOS	DELAY	LOS
1. SR 65 / Avenue 128	Signalized	C	AM	28.3	C	30.0	C
			PM	30.3	C	32.2	C

DELAY is measured in seconds
LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

For signalized and all-way stop controlled intersections, delay results show the average for the entire intersection.

CEQA ENVIRONMENTAL CHECKLIST

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. Implementation of the Project would result in a significant impact if it would:

- ✓ Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less Than Significant Impact After Mitigation - An important goal is to maintain acceptable levels of service along the highway, street, and road network. To accomplish this, Tulare County RMA and Caltrans adopt minimum levels of service in an attempt to control congestion that may result as new development occurs. Tulare County's 2030 General Plan, policy number TC-1.16, identifies a minimum LOS standard of "D" on the County roadway system (both segments and intersections). Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities; however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. For undeveloped or not densely developed locations, the goal may be to achieve LOS "C".

Results of the analysis show that the Project will not exceed Tulare County's minimum LOS standard of "D" as shown in Tables E-1 and E-2. However, Caltrans's minimum LOS standard of "C" will be exceeded for the Cumulative Year 2040 Without Project and Cumulative Year 2040 Plus Project scenarios.

Described below are mitigation measures at the SR 65 and Avenue 128 intersection for the Cumulative Year 2040 scenarios that address future transportation and circulation issues in the study area. The improvements identified would result in acceptable levels of service as shown in Tables E-3.

- ✓ <u>SR 65 at Avenue 128</u>
  Recommended improvements to achieve acceptable levels of service:
  - Cumulative Year 2040 Without Project and Plus Project scenarios:

- Widen the westbound approach to 1 left turn lane, 1 through lane, and 1 right turn lane with overlap phasing (adding 1 right turn)

✓ Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Less Than Significant Impact **-** In the fall of 2013, Senate Bill 743 (SB 743) was passed by the legislature and signed into law by the governor. For some parts of California (and possibly the entire state), this legislation will eventually change the way that transportation studies are conducted for environmental documents. In the areas where SB 743 is implemented, delay-based metrics such as roadway capacity and level of service will no longer be the performance measures used for the determination of the transportation impacts of projects in studies conducted under CEQA. Instead, new performance measures such as vehicle miles travelled (VMT) or other similar measures will be used.

July 1, 2020 is the statewide implementation date and agencies may opt-in use of new metrics prior to that date. Therefore, the traffic analysis follows current practice regarding state and local guidance as of the date of preparation. However, an estimate of VMT associated with the Project is provided in Table E-4 for the Project. The estimated VMT for the Project is derived from the trip length from the Project site to the northern boundary of Tulare County (near Orange Cove). It should be noted that the Office of Planning and Research (OPR) has determined that projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less than significant transportation impact. The Project will generate an additional 112 trips per day in accordance with the expansion of the site. Therefore, no mitigation is required.

Table E-4
Estimated Project VMT

LAND USE	ADT VOLUME	RATE	AVERAGE DAILY VMT
Deer Creek Rock Expansion (Truck's)	112	60 miles/trip	6,720
		TOTAL	6,720

Notes:
(1) VMT rate for truck's per distance to northern Tulare County boundary

✓ Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (eg., farm equipment)?

Less Than Significant Impact **-** The proposed Project will not create any new design features on site. The existing on-site circulation pattern will remain the same as the currently approved surface mining permit. Although there will be an increase in the volume of vehicles accessing the site, the same types of vehicles (heavy-duty haul trucks and personal vehicles) will continue to

access the site. The existing site access/egress is located at a sufficient distance from any intersection to allow for safe vehicular access/egress to and from the site. Therefore, no mitigation is required.

- ✓ Result in inadequate emergency access?

Less Than Significant Impact **-** The Project site is currently accessed/egressed via an existing entrance road from Deer Creek Drive. Emergency access to the site will remain as approved on the existing surface mining permit, and adequate space will be maintained for emergency vehicles to turn around on site. Therefore, no mitigation is required.

1.0 Introduction

1.1 Description of the Region/Project

This Traffic Impact Study (TIS) has been prepared for the purpose of analyzing traffic conditions related to the Deer Creek Rock Expansion (Project). The Project seeks an expansion of the existing Deer Creek Rock Co., Inc. site located in Tulare County. The Project is located south of Avenue 120 (Deer Creek Drive) approximately 1/2 mile east of Road 272 along the south bank of Deer Creek. The Applicant is requesting an increase in annual production of 500,000 tons per year (from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year) which will generate an additional 224 round trips per day. Figures 1-1 and 1-2 show the location of the Project along with major roadways and highways in the Project area.

1.1.1 *Project Access*

There will be one (1) access point to the proposed Project, which currently serves as the access point for existing operations. This access point is located along Deer Creek Drive, east of Road 272.

1.1.2 *Study Area*

The following intersections and roadway segments included in this TIS were determined in consultation with Tulare County and California Department of Transportation (Caltrans) staff and include:

Intersections

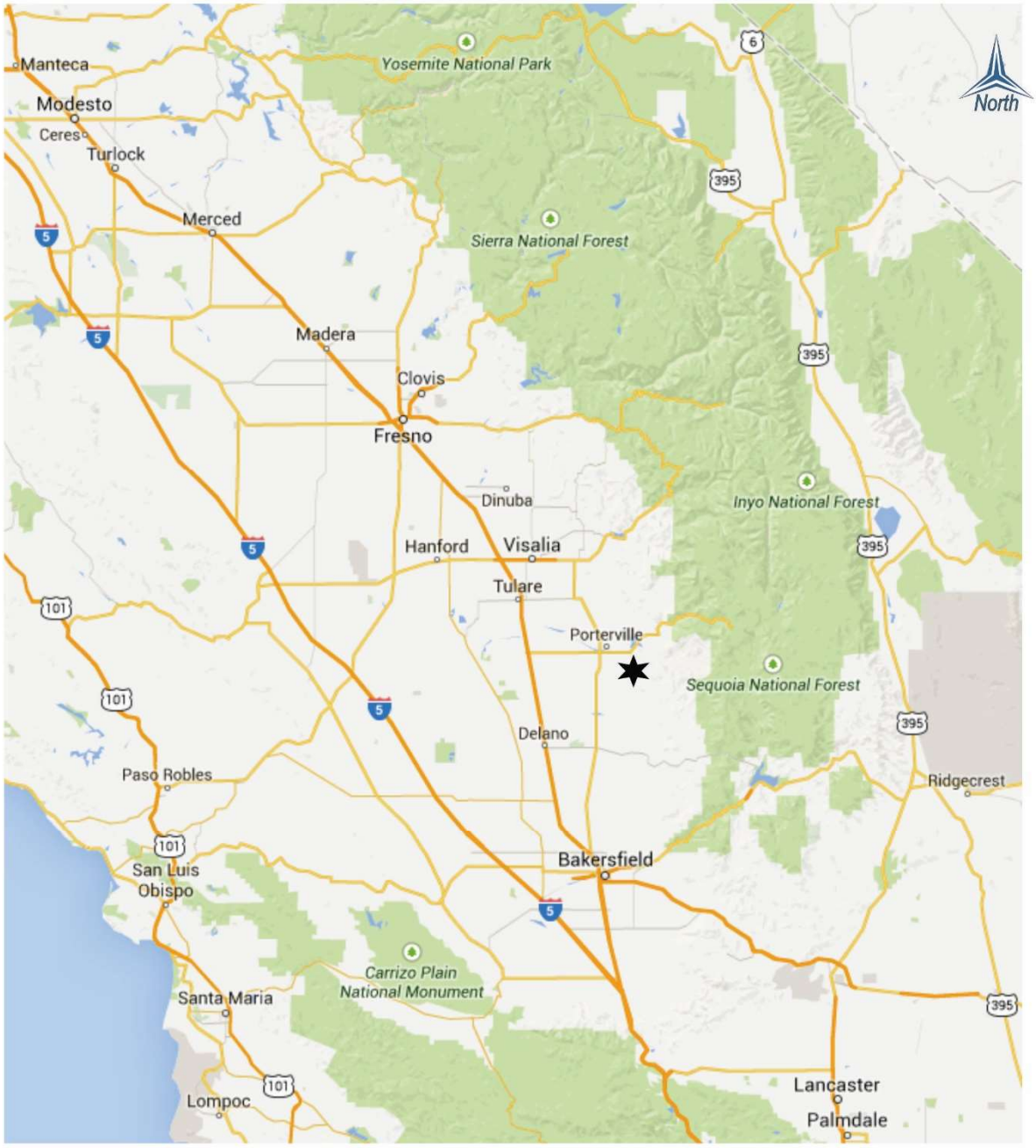
- ✓ SR 65 / Avenue 128
- ✓ Plano Street / Avenue 128
- ✓ Road 264 / Avenue 116
- ✓ Road 264 / Deer Creek Drive
- ✓ Road 272 / Deer Creek Drive
- ✓ Project Access / Deer Creek Drive

Roadway Segments

- ✓ Avenue 128 between:
  - SR 65 and Plano Street
- ✓ Plano Street-Avenue 116 between:
  - Avenue 128 and Road 264
- ✓ Road 264 between:
  - Deer Creek Drive and Avenue 116
- ✓ Deer Creek between:
  - Road 264 and Road 272
  - Road 272 and Project Access

Deer Creek Rock Co., Inc. Expansion
Regional Location

Figure 1-1

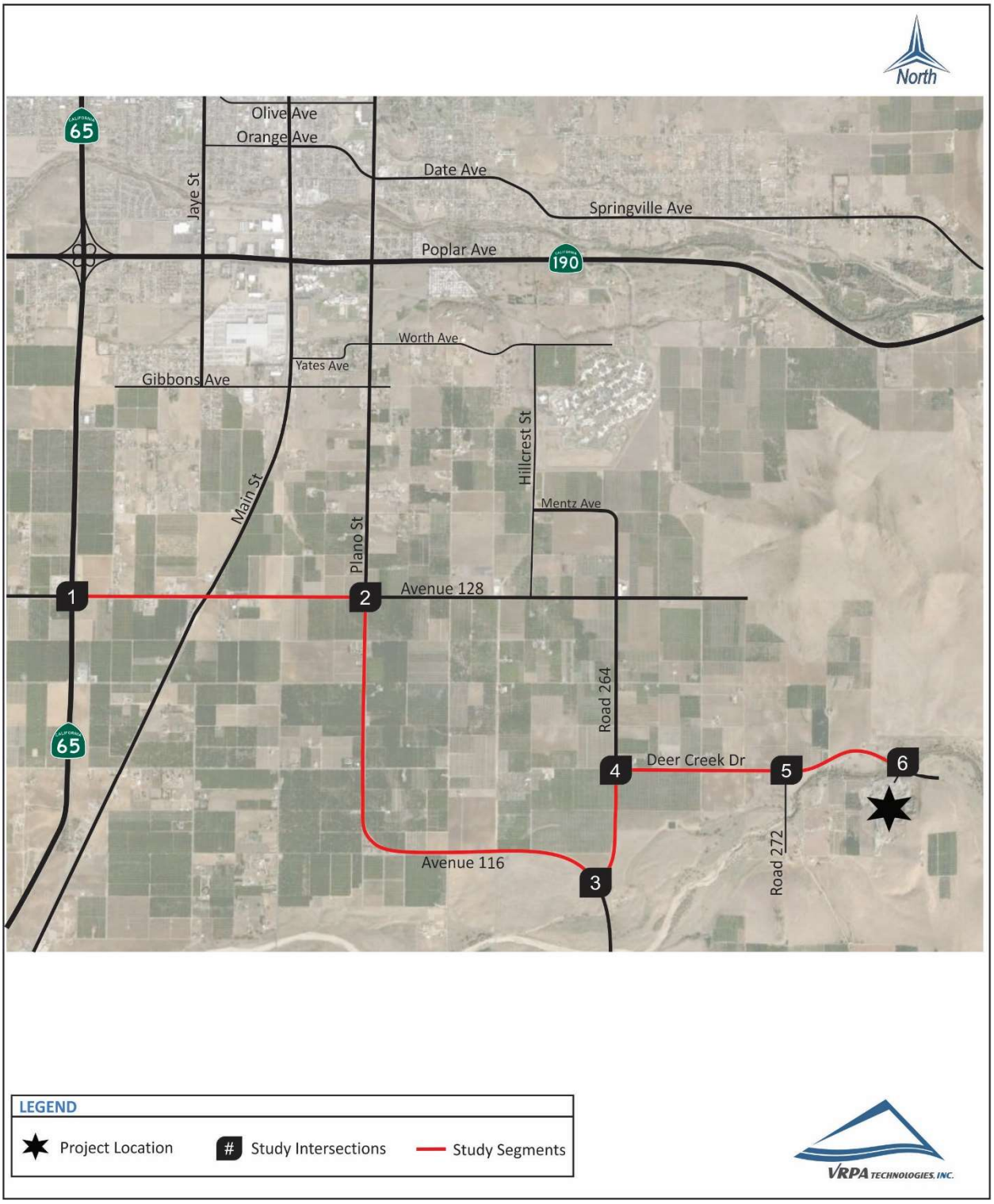


LEGEND

★ Project Location

Deer Creek Rock Co., Inc. Expansion
Project Location

Figure 1-2



1.1.3 *Study Scenarios*

The TIS completed for the proposed Project includes level of service (LOS) analysis for the following traffic scenarios:

- ✓ Existing
- ✓ Existing Plus Project
- ✓ Near-Term (Opening Year 2020) Without Project
- ✓ Near-Term (Opening Year 2020) Plus Project
- ✓ Cumulative Year 2040 Without Project
- ✓ Cumulative Year 2040 Plus Project

1.2 Methodology

When preparing a TIS, guidelines set by affected agencies are followed. In analyzing street and intersection capacities the Level of Service (LOS) methodologies are applied. LOS standards are applied by transportation agencies to quantitatively assess a street and highway system's performance. In addition, safety concerns are analyzed to determine the need for appropriate mitigation resulting from increased traffic near sensitive uses and other evaluations such as the need for signalized intersections or other improvements.

1.2.1 *Intersection Analysis*

Intersection LOS analysis was conducted using the Synchro 10 software program. Synchro 10 supports the Highway Capacity Manual (HCM) 6th Edition methodologies and is an acceptable program by Tulare County and Caltrans staff for assessment of traffic impacts. Levels of Service can be determined for both signalized and unsignalized intersections. One (1) of the study intersections is currently signalized and the other five (5) study intersections are currently unsignalized.

Tables 1-1 and 1-2 indicate the ranges in the amounts of average delay for a vehicle at signalized and unsignalized intersections for the various levels of service ranging from LOS "A" to "F".

Intersection turning movement counts and roadway geometrics used to develop LOS calculations were obtained from field review findings and count data provided from the traffic count sources identified in Section 2.1.

When an unsignalized intersection does not meet acceptable LOS standards, the investigation of the need for a traffic signal shall be evaluated. The California Manual on Uniform Traffic Control Devices (California MUTCD) introduces standards for determining the need for traffic signals. The California MUTCD indicates that the satisfaction of one or more traffic signal warrants does not in itself require the installation of a traffic signal. In addition to the warrant

analysis, an engineering study of the current or expected traffic conditions should be conducted to determine whether the installation of a traffic signal is justified. The California MUTCD Peak Hour Warrant (Warrant 3) will be used, as necessary, to determine if a traffic signal is warranted at the unsignalized intersection that falls below current LOS standards.

1.2.2 *Roadway Segment Analysis*

According to the HCM, LOS is categorized by two parameters of traffic: uninterrupted and interrupted flow. Uninterrupted flow facilities do not have fixed elements such as traffic signals that cause interruptions in traffic flow. Interrupted flow facilities do have fixed elements that cause an interruption in the flow of traffic, such as stop signs and signalized intersections along arterial roads. A roadway segment is defined as a stretch of roadway generally located between signalized or controlled intersections.

Segment LOS is important in order to understand whether the capacity of a roadway can accommodate future traffic volumes. Table 1-3 provides a definition of segment LOS. The performance criteria used for evaluating volumes and capacities on the road and highway system for this study were estimated using the Modified HCM-Based LOS Tables (Florida Tables). The tables consider the capacity of individual road and highway segments based on numerous roadway variables (design speed, passing opportunities, signalized intersections per mile, number of lanes, saturation flow, etc.). These variables were identified and applied to reflect segment LOS conditions. Street segment capacity was determined using information shown in Tables 1-4, which comes from the Modified Arterial Level of Service Tables included in Appendix A.

Table 1-1
Signalized Intersections Level of Service Definitions (Highway Capacity Manual)

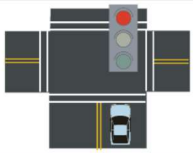
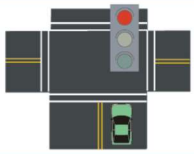
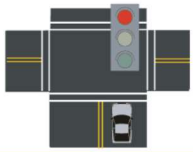
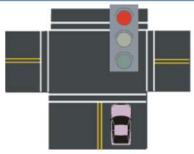
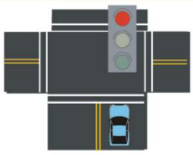
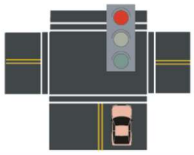
LEVEL OF SERVICE	DEFINITION		AVERAGE TOTAL DELAY (sec/veh)
A	Describes operations with very low delay. This level of service occurs when there is no conflicting traffic for a minor street.		≤ 10.0
B	Describes operations with moderately low delay. This level generally occurs with a small amount of conflicting traffic causing higher levels of average delay.		> 10.0 - 20.0
C	Describes operations with average delays. These higher delays may result from a moderate amount of minor street traffic. Queues begin to get longer.		> 20.0 - 35.0
D	Describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from shorter gaps on the mainline and an increase of minor street traffic. The queues of vehicles are increasing.		> 35.0 - 55.0
E	Describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor gaps for the minor street to cross and large queues.		> 55.0 - 80.0
F	Describes operations that are at the failure point. This level, considered to be unacceptable to most drivers, often occurs with over- saturation, that is, when arrival flow rates exceed the capacity of the intersection. Insufficient gaps of suitable size exist to allow minor traffic to cross the intersection safely.		> 80.0

Table 1-2
Unsignalized Intersections Level of Service Definitions (Highway Capacity Manual)

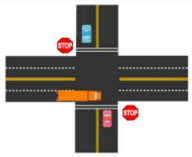
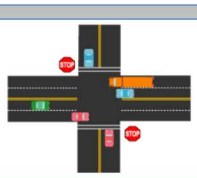
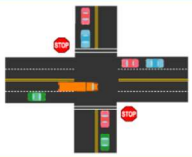
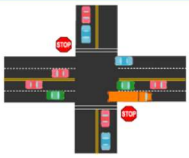
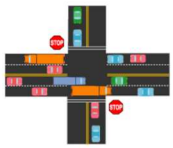
LEVEL OF SERVICE	DEFINITION		AVERAGE TOTAL DELAY (sec/veh)
A	No delay for stop-controlled approaches.		0 - 10.0
B	Describes operations with minor delay.		> 10.0 - 15.0
C	Describes operations with moderate delays.		> 15.0 - 25.0
D	Describes operations with some delays.		> 25.0 - 35.0
E	Describes operations with high delays and long queues.		> 35.0 - 50.0
F	Describes operations with extreme congestion, with very high delays and long queues unacceptable to most drivers.		> 50.0

Table 1-3
Roadway Segment Level of Service Definitions (Highway Capacity Manual)

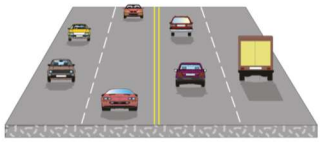
LEVEL OF SERVICE	DEFINITION	
A	Represents free flow. Individual vehicles are virtually unaffected by the presence of others in the traffic stream.	
B	Is in the range of stable flow, but the presence of other vehicles in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.	
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 interactions with other vehicles in the traffic stream.	
D	Is a crowded segment of roadway with a large number of vehicles restricting mobility and a stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.	
E	Represents operating conditions at or near the level capacity. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.	
F	Is used to define forced or breakdown flow (stop-and-go gridlock). This condition exists when the amount of traffic approaches a point where the amount of traffic exceeds the amount that can travel to a destination. Operations within the queues are characterized by stop and go waves, and they are extremely unstable.	

Table 1-4
Peak One-Way Volumes

Level of Service					
Lanes	Division	B	C	D	E
State Arterials					
1	Undivided	900	920	**	**
2	Divided	*	1,390	1,840	**
3	Divided	*	2,280	2,790	**
Non-State Roadways					
1	Undivided	648	662	**	**
1	Divided	*	1,251	1,656	**
2	Divided	*	2,052	2,511	**

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. Volumes greater than level of service D become F because intersection capacities have been reached.

1.3 Policies to Maintain Level of Service

An important goal is to maintain acceptable levels of service along the highway, street, and road network. To accomplish this, Tulare County and Caltrans adopt minimum levels of service in an attempt to control congestion that may result as new development occurs.

Tulare County's 2030 General Plan, policy number TC-1.16, identifies a minimum LOS standard of D on the County roadway system (both segments and intersections).

Based on guidance from Caltrans, the LOS for operating State highway facilities is based on Measures of Effectiveness (MOE) identified in the Highway Capacity Manual (HCM). Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities; however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than this target LOS, the existing MOE should be maintained. In general, the region-wide goal for an acceptable LOS on all freeways, roadways segments, and intersections is "D". For undeveloped or not densely developed locations, the goal may be to achieve LOS "C".

Given the LOS standards of the various agencies in the Project area, the goal of the Project is to provide LOS results that meet the minimum LOS "C" for Caltrans facilities and LOS "D" for County facilities for all intersections and segments.

2.0 Existing Conditions

2.1 Existing Traffic Counts and Roadway Geometrics

The first step toward assessing Project traffic impacts is to assess existing traffic conditions. Existing AM and PM peak hour turning movements were collected at study intersections by National Data and Surveying Services. Intersection turning movement counts were conducted for the peak hour periods of 7:00-9:00 AM and 4:00-6:00 PM for all study intersections on Thursday, March 28, 2019. Traffic count data worksheets are provided in Appendix B.

2.2 Existing Functional Roadway Classification System

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the type of service they are intended to provide. Fundamental to this process is the recognition that individual streets and highways do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads.

The current hierarchical system of roadways within the County of Tulare's sphere of influence consists of the following four (4) basic classifications:

- ✓ **State Freeways and Highways** – 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.

    - **State Route 65** - currently exists as a four-lane divided roadway with a posted speed limit of 55 mph through the study area. According to the California Department of Transportation's website, the average annual daily traffic (AADT) along SR-65 in this area consisted of approximately 15,300 trips in 2017.

- ✓ **Collectors** – provide for internal traffic movement within communities and connect local roads to arterials. Direct access to abutting private property shall generally be permitted. While not specifically identified in the Circulation Element of the Tulare County General Plan Update, the following roadways are assumed to serve as collectors.

    - **Avenue 128** - currently exists as a two-lane undivided roadway without bike lanes and without a posted speed limit through the study area, except for the school zone which contains a posted speed limit of 25 mph.

- **Plano Street/Avenue 116** - currently exists as a two-lane undivided roadway without bike lanes and without a posted speed limit through the study area.
- **Road 264** - currently exists as a two-lane undivided roadway without bike lanes and without a posted speed limit through the study area.
- **Deer Creek Drive** - currently exists as a two-lane undivided roadway without bike lanes and without a posted speed limit through the study area.

✓ **Local Streets** – Roadways which 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.

2.3 Affected Streets and Highways

Major street and highway intersections and segments in the Project Area were analyzed to determine levels of service utilizing HCM-based methodologies described previously. The study intersections and street and highway segments included in this TIS are listed below.

Intersections

✓ SR 65 / Avenue 128
✓ Plano Street / Avenue 128
✓ Road 264 / Avenue 116
✓ Road 264 / Deer Creek Drive
✓ Road 272 / Deer Creek Drive
✓ Project Access / Deer Creek Drive

Roadway Segments

✓ Avenue 128 between:
  - SR 65 and Plano Street

✓ Plano Street-Avenue 116 between:
  - Avenue 128 and Road 264

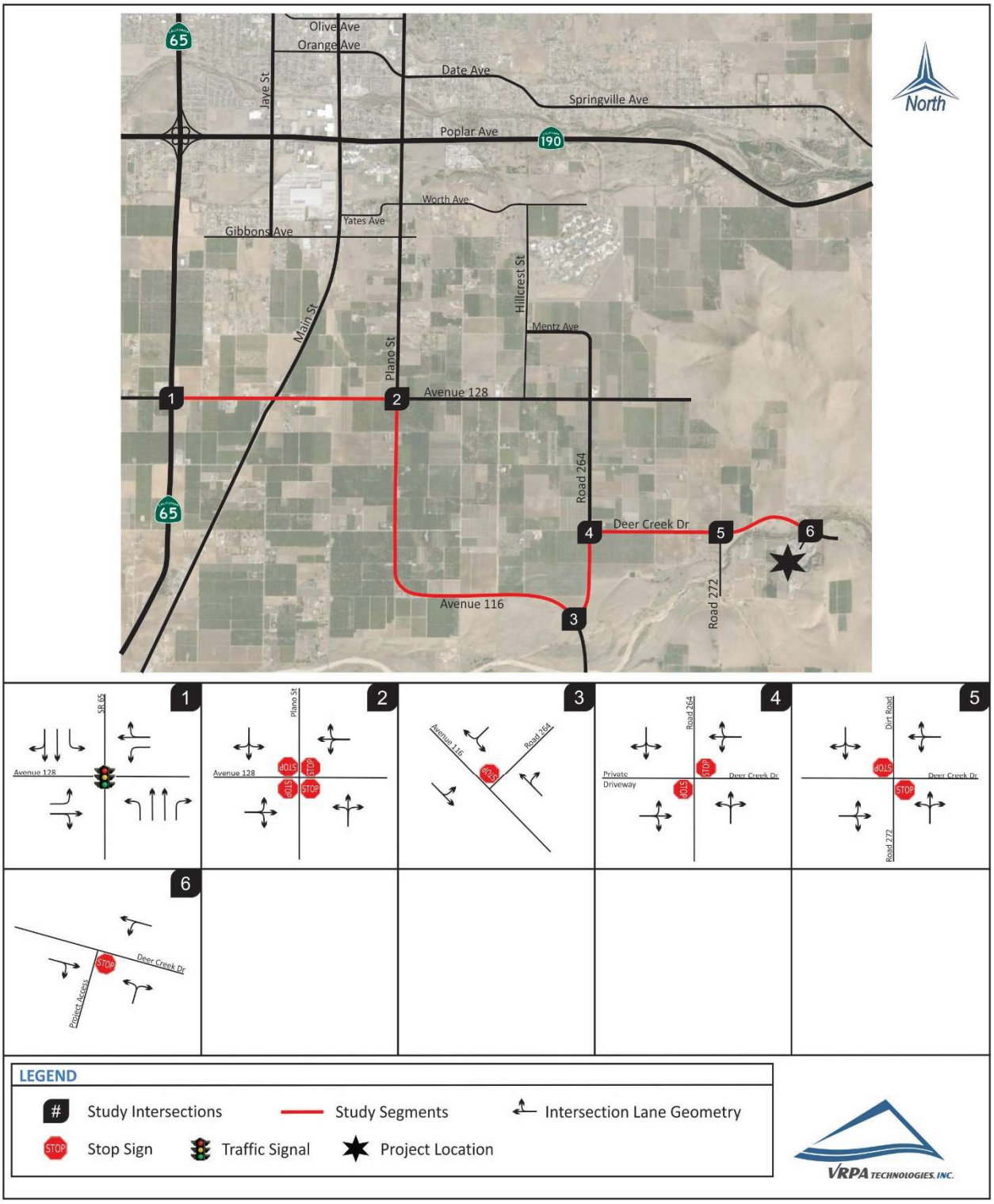
✓ Road 264 between:
  - Deer Creek Drive and Avenue 116

✓ Deer Creek between:
  - Road 264 and Road 272
  - Road 272 and Project Access

The existing lane geometry at the study area intersection is shown in Figure 2-1. One (1) of the study intersections is currently signalized and the other five (5) study intersections are currently unsignalized. Figures 2-2 and 2-3 shows existing traffic volumes for the Weekday AM and PM peak hours in the study area.

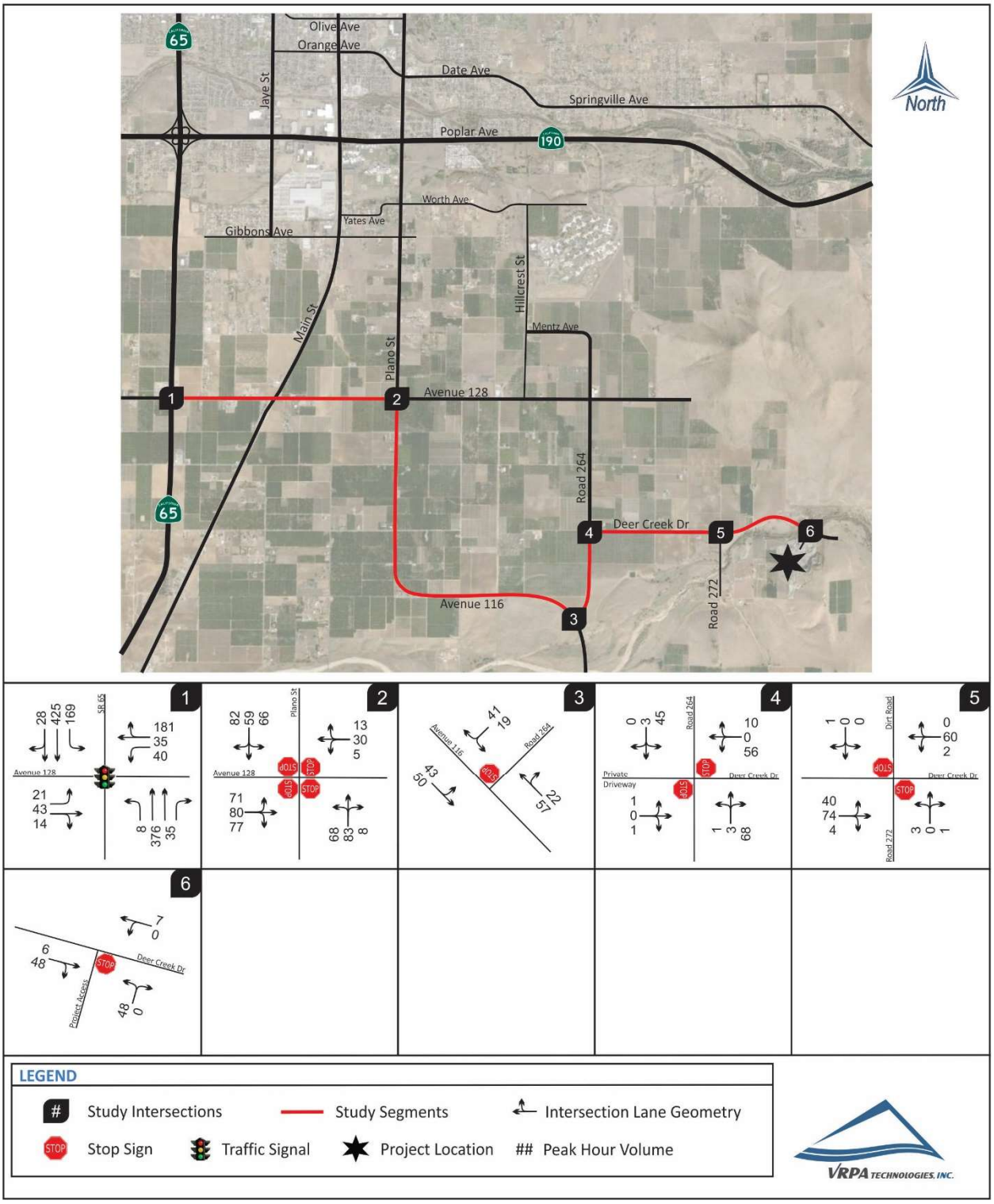
Deer Creek Rock Co., Inc. Expansion
Existing Lane Geometry

Figure 2-1



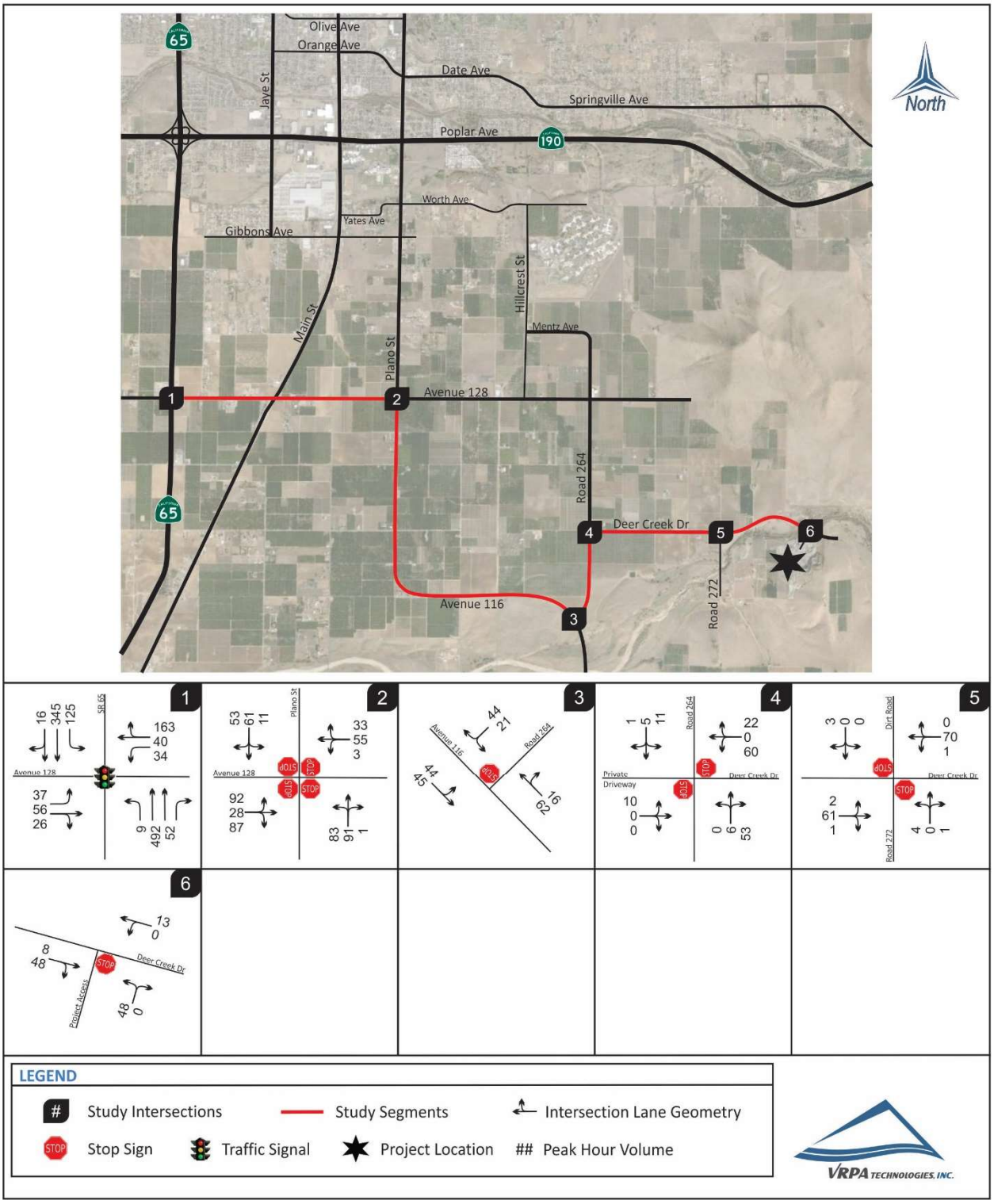
Deer Creek Rock Co., Inc. Expansion
Existing AM Peak Hour Traffic

Figure 2-2



Deer Creek Rock Co., Inc. Expansion
Existing PM Peak Hour Traffic

Figure 2-3



2.4 Level of Service

2.4.1 *Intersection Capacity Analysis*

All intersection LOS analyses were estimated using the Synchro 10 software program. Various roadway geometrics, traffic volumes, and properties (peak hour factors, storage pocket length, etc.) were input into the Synchro 10 software program in order to accurately determine the travel delay and LOS for each Study scenario. The intersection LOS and delays reported represent the HCM 6th Edition outputs. Synchro assumptions, listed below, show the various Synchro inputs and methodologies used in the analysis.

✓ **Traffic Conditions**

- The peak hour factor (PHF) used for Existing, Existing Plus Project, Near-Term Year 2020 Without Project, and Near-Term Year 2020 Plus Project conditions was determined from the existing counts. The HCM default value of 0.92 was used for the SR 65 and Avenue 128 intersection for the Cumulative Year 2040 scenarios.
- Heavy vehicle percentages were applied as follows and are based on the HCM default, traffic counts, or Caltrans' parameters:
  - State Highway 65 – 12%
  - All other roadways – 3%

Results of the analysis show that all of the study intersections are currently operating at acceptable levels of service during the weekday peak hours. Table 2-1 shows the intersection LOS for the existing conditions. Synchro 10 (HCM 6th Edition) Worksheets are provided in Appendix C.

2.4.2 *Queuing Analysis*

Table 2-2 provides a queue length summary for study intersections for the Existing scenario. Traffic queue lengths at an intersection or along a roadway segment assist in the determination of a roadway's overall performance. Excessive queuing at an intersection increases vehicle delay and reduces capacity. If a dedicated left turn lane doesn't provide adequate storage, vehicles will queue beyond the left turn storage pocket and into other travel lanes, thus increasing vehicle delay and reducing capacity. The queuing analyses is based upon methodology presented in Chapter 400 of Caltrans' Highway Design Manual (HDM), which is included in Appendix D.

2.4.3 *Roadway Segment Capacity Analysis*

Peak hour LOS segment analysis along the existing street and highway system are reflected in Table 2-3. Roadway segment analysis was based on the Modified HCM-Based LOS Tables (Florida Tables). The tables consider the capacity of individual road and highway segments based on numerous roadway variables (design speed, passing opportunities, signalized intersections per mile, number of lanes, saturation flow, etc.). These variables were identified and applied to reflect segment LOS conditions. Results of the analysis show that all of the study roadway segments are currently operating at acceptable levels of service.

Table 2-1
Existing Intersection Operations

INTERSECTION	CONTROL	TARGET LOS	PEAK HOUR	EXISTING	
				DELAY	LOS
1. SR 65 / Avenue 128	Signalized	C	AM	28.2	C
			PM	28.9	C
2. Plano Street / Avenue 128	All-Way Stop Sign	D	AM	11.8	B
			PM	9.9	A
3. Road 264 / Avenue 116	One-Way Stop Sign	D	AM	9.8	A
			PM	9.7	A
4. Road 264 / Deer Creek Drive	Two-Way Stop Sign	D	AM	10.3	B
			PM	9.5	A
5. Road 272 / Deer Creek Drive	One-Way Stop Sign	D	AM	10.1	B
			PM	10.0	B
6. Project Access / Deer Creek Drive	One-Way Stop Sign	D	AM	9.2	A
			PM	9.6	A

DELAY is measured in seconds

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

For signalized and all-way stop controlled intersections, delay results show the average for the entire intersection. For one-way and two-way stop controlled intersections, delay results show the delay for the worst movement.

Table 2-2
Existing Queuing Operations

INTERSECTION	EXISTING QUEUE STORAGE LENGTH (ft)		EXISTING CONDITIONS	
			AM Queue	PM Queue
SR 65 / Avenue 128	NB Left	550	7	8
	NB Right	200	29	43
	SB Left	450	141	104
	EB Left	475	18	31
	WB Left	350	33	28

Queue is measured in feet / **BOLD** denotes exceedance

Table 2-3
Existing Segment Operations

STREET SEGMENT	SEGMENT DESCRIPTION	DIRECTION	TARGET LOS	PEAK HOUR	EXISTING	
					VOLUME	LOS
Avenue 128						
SR 65 to Plano Street	2 Lanes Undivided	EB	D	AM	247	B
				PM	233	B
		WB		AM	256	B
				PM	237	B
Plano Street - Avenue 116						
Avenue 128 to Road 264	2 Lanes Undivided	NB / WB	D	AM	159	B
				PM	175	B
		SB / EB		AM	141	B
				PM	151	B
Road 264						
Deer Creek Drive and Avenue 116	2 Lanes Undivided	NB	D	AM	72	B
				PM	60	B
		SB		AM	60	B
				PM	65	B
Deer Creek Drive						
Road 264 to Road 272	2 Lanes Undivided	EB	D	AM	118	B
				PM	64	B
		WB		AM	64	B
				PM	77	B
Road 272 to Project Access	2 Lanes Undivided	EB	D	AM	75	B
				PM	62	B
		WB		AM	62	B
				PM	71	B

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

3.0 Traffic Impacts

This chapter provides an assessment of the traffic the Project is expected to generate and the impact of that traffic on the surrounding street system.

3.1 Trip Generation

To assess the impacts that the Project may have on the surrounding street and highway segments and intersections, the first step is to determine Project trip generation. The Project's trip generation was estimated based on information received from the Project representative as well as the previous Conditions of Approval. The Project's estimated Daily, AM peak hour, and PM peak hour trips are shown in Table 3-1. As shown in Table 3-1, the current mining permit allows operations of 1,000,000 tons/year which equates to the existing trip generation. The Project seeks to increase operations to 1,500,000 tons/year. Therefore, the Project trip generation applied in this analysis considers the net increase of trips associated with the increase in operations.

Table 3-1
Project Trip Generation

Land Use Description	Trip Rate Source	Average Daily Trip Ends [1]	Weekday AM Peak Hour				Weekday PM Peak Hour			
		Volume	In:Out	In	Out	Total	In:Out	In	Out	Total
Existing Surface Mining Operation	Deer Creek Rock Co., Inc. [2]	188	50:50	19	19	38	50:50	19	19	38
	Total	**188**		**19**	**19**	**38**		**19**	**19**	**38**
Proposed Surface Mining Operation	Deer Creek Rock Co., Inc. [2]	300	50:50	30	30	60	50:50	30	30	60
	Total	**300**		**30**	**30**	**60**		**30**	**30**	**60**
Net Increase		**112**		**11**	**11**	**22**		**11**	**11**	**22**
Net Increase with Passenger Car Equivalent (PCE) of 2.5:1		**280**		**28**	**28**	**56**		**28**	**28**	**56**

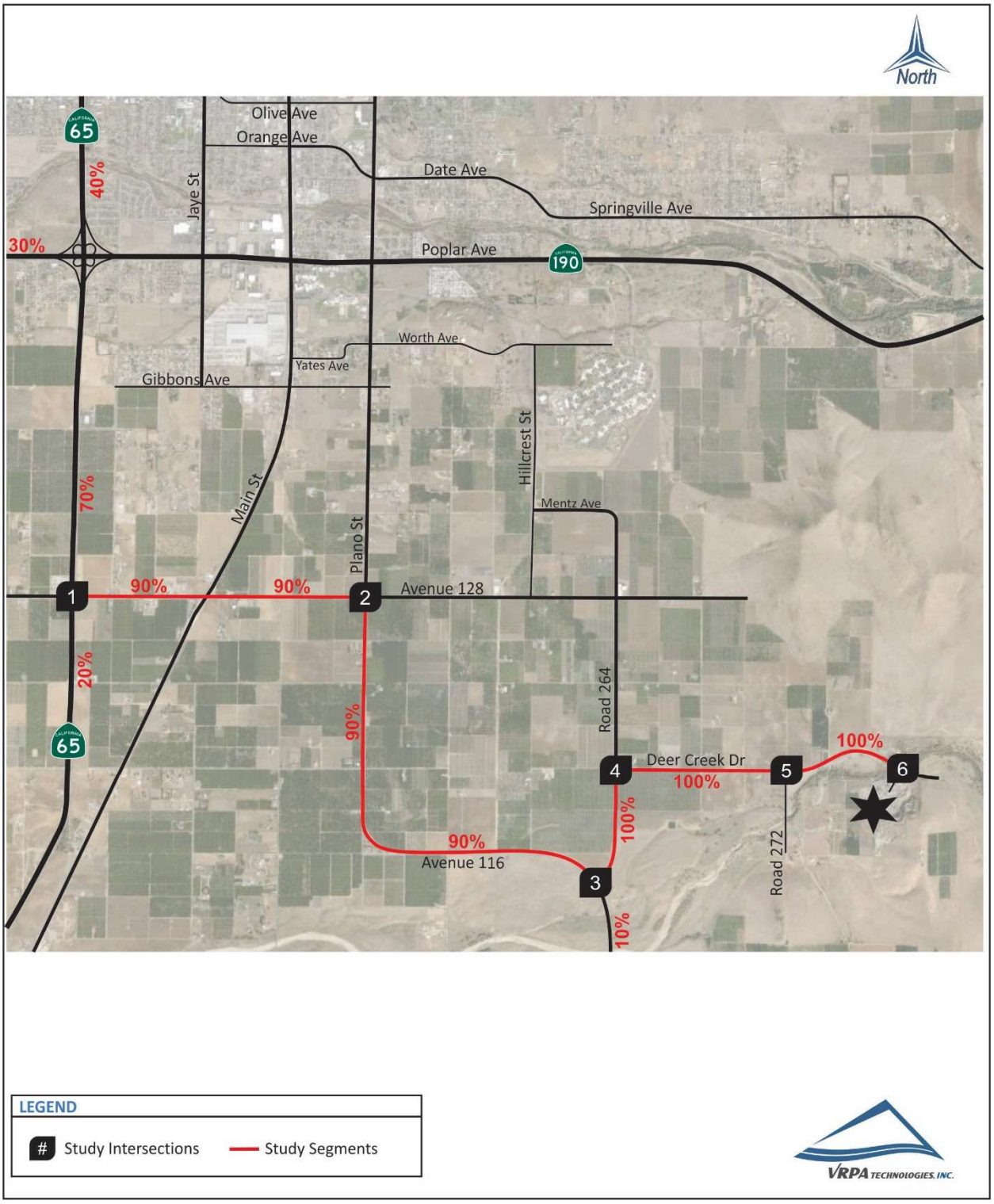
1 A "trip" is defined as a "one-way" trip.
2 Trip generation is consistent with information received from the Project representative as well as the previous Conditions of Approval.

3.2 Trip Distribution

Project trip distribution is shown in Figure 3-1 and is based upon engineering judgement, prevailing traffic patterns in the study area, complementary land uses, major routes, population centers and customer base. Project traffic as shown in Table 3-1 was distributed to the roadway system using the trip distribution percentages shown in Figure 3-1.

Deer Creek Rock Co., Inc. Expansion
Trip Distribution

Figure 3-1



3.3 Project Traffic

Project traffic as shown in Table 3-1 was distributed to the roadway system using the trip distribution percentages shown in Figure 3-1. A graphical representation of the resulting AM and PM peak hour Project trips is shown in Figures 3-2 and 3-3. It should be noted that Figures 3-2 and 3-3 include a Passenger Car Equivalent (PCE) of 2.5:1 for Project truck trips entering and exiting the facility.

3.4 Existing Plus Project Traffic Conditions

An Existing Plus Project Scenario was analyzed to include existing traffic plus traffic generated by the Project. The resulting traffic is shown in Figures 3-4 and 3-5.

3.5 Approved/Pending Project Traffic

Traffic impact analyses typically require the analysis of approved or pending developments that have not yet been built in the vicinity of the Project in addition to the proposed Project. Tulare County and Caltrans staff was consulted for approved or pending developments in the study area. The only approved or pending projects in the study area are improvement projects related to drainage and culvert repair, landscaping, and intersection improvements from Westwood Street to Main street along Avenue 128. Recent improvements at the Avenue 128 and SR 65 intersection are reflected in the existing conditions and future year analysis.

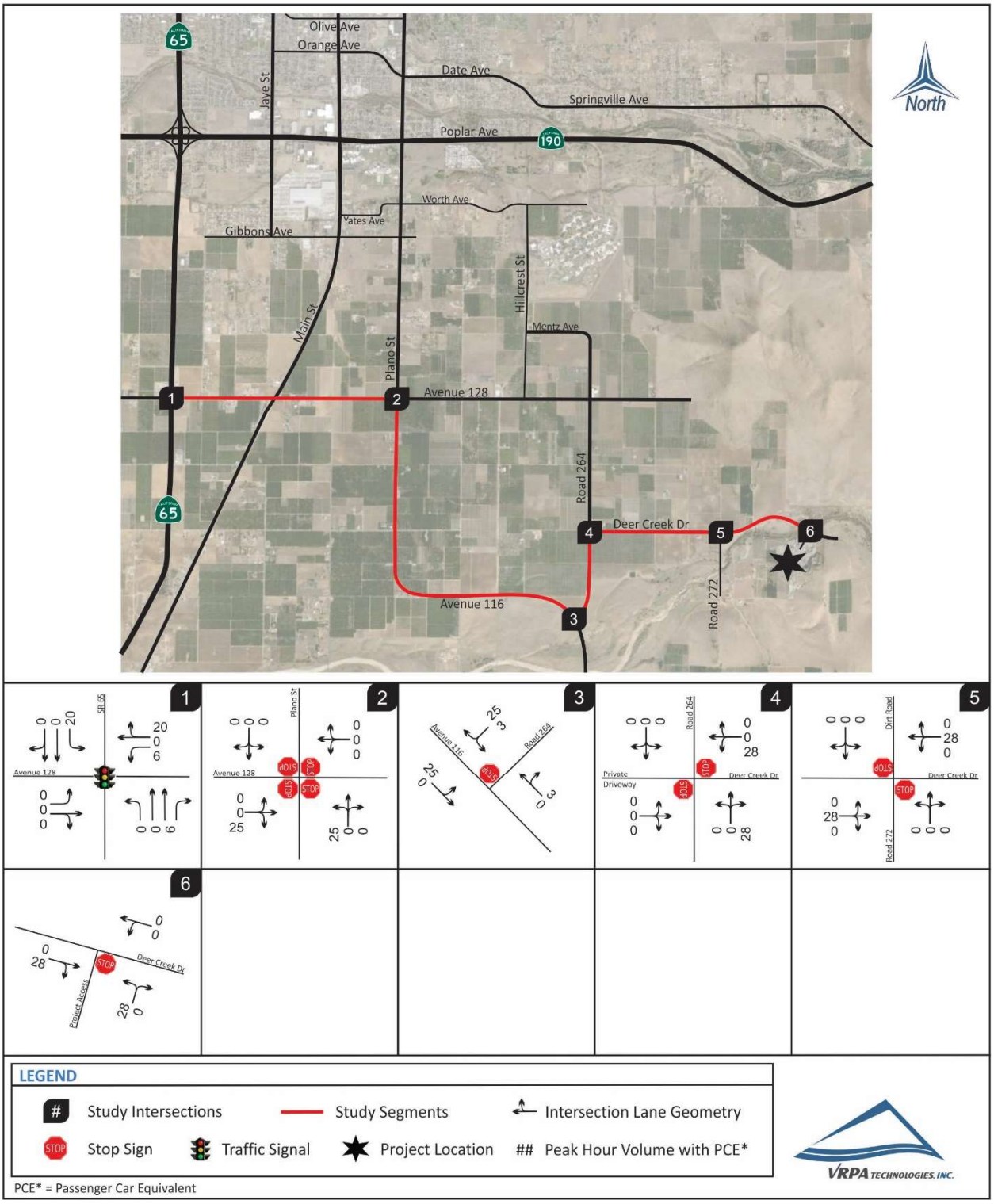
3.6 Near-Term Traffic Conditions

A Near-Term Scenario was analyzed to include year 2020 traffic (estimated Project Opening-Day) plus traffic generated by other projects approved or being processed by Tulare County. Traffic conditions in the Year 2020 was estimated by using a 1.5% per year growth factor for background (ambient) growth along Tulare County facilities. The Tulare County Association of Governments (TCAG) regional travel demonstrates a growth rate 0.5 to 2%. A 2.5% per year growth factor was applied to all intersections along SR 65 which is consistent with Caltrans' SR 65 Transportation Concept Report (TCR). The resulting traffic is shown in Figures 3-6 and 3-7.

A Near-Term Plus Project Scenario was analyzed to include year 2020 traffic plus traffic generated by other approved/pending projects plus traffic generated by the Project. The resulting traffic is shown in Figures 3-8 and 3-9.

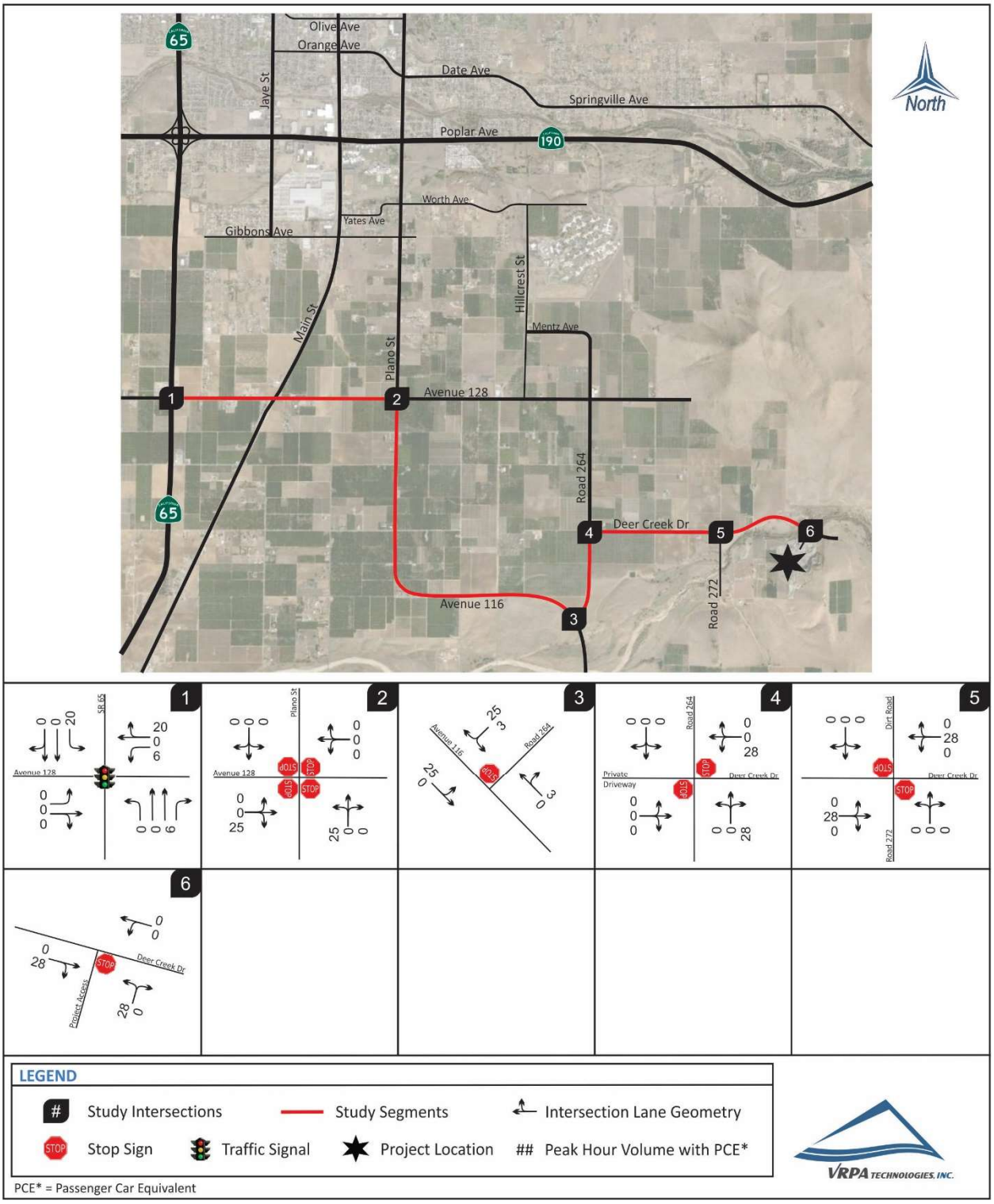
Deer Creek Rock Co., Inc. Expansion
AM Peak Hour Project Traffic

Figure 3-2



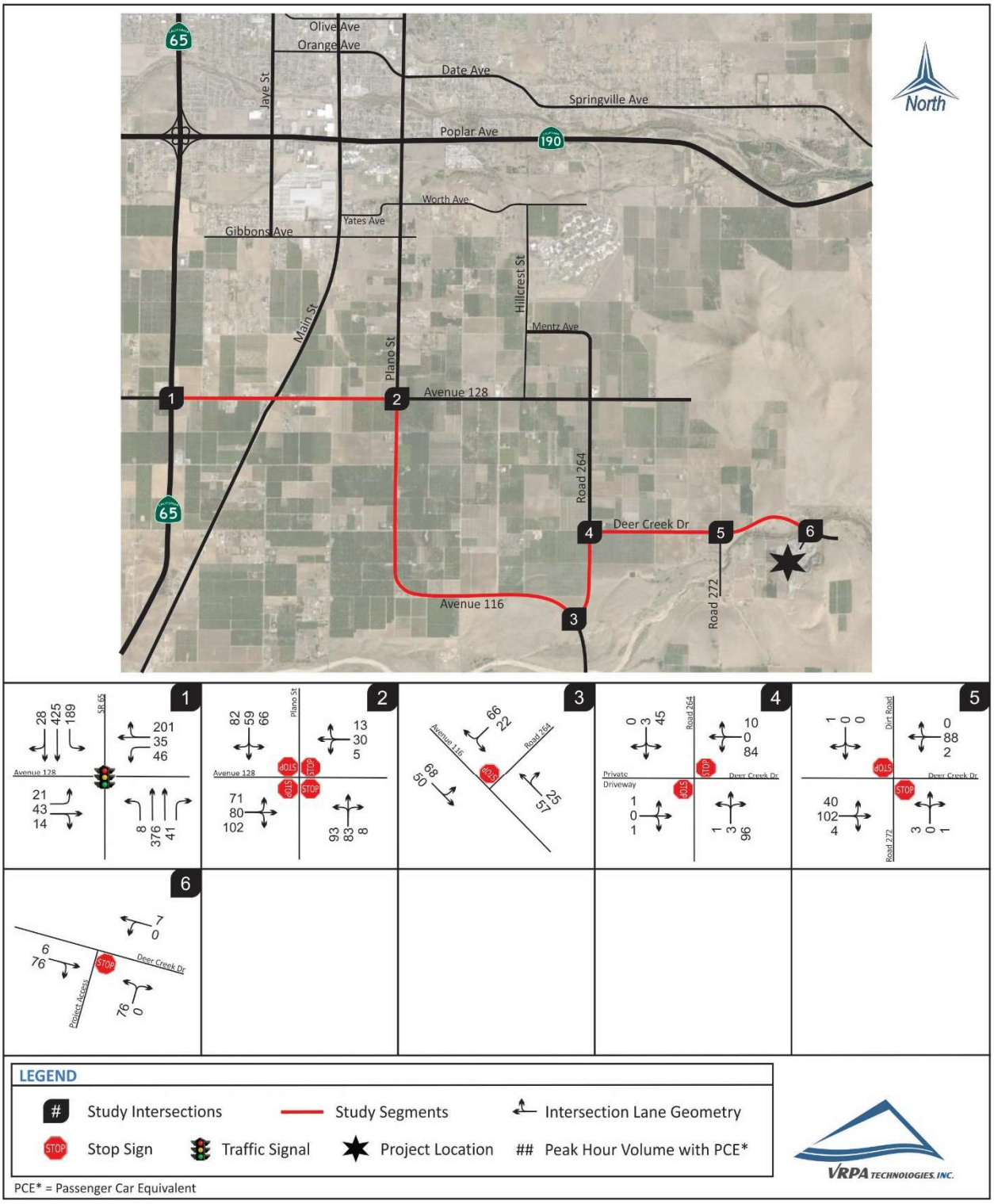
Deer Creek Rock Co., Inc. Expansion
PM Peak Hour Project Traffic

Figure 3-3



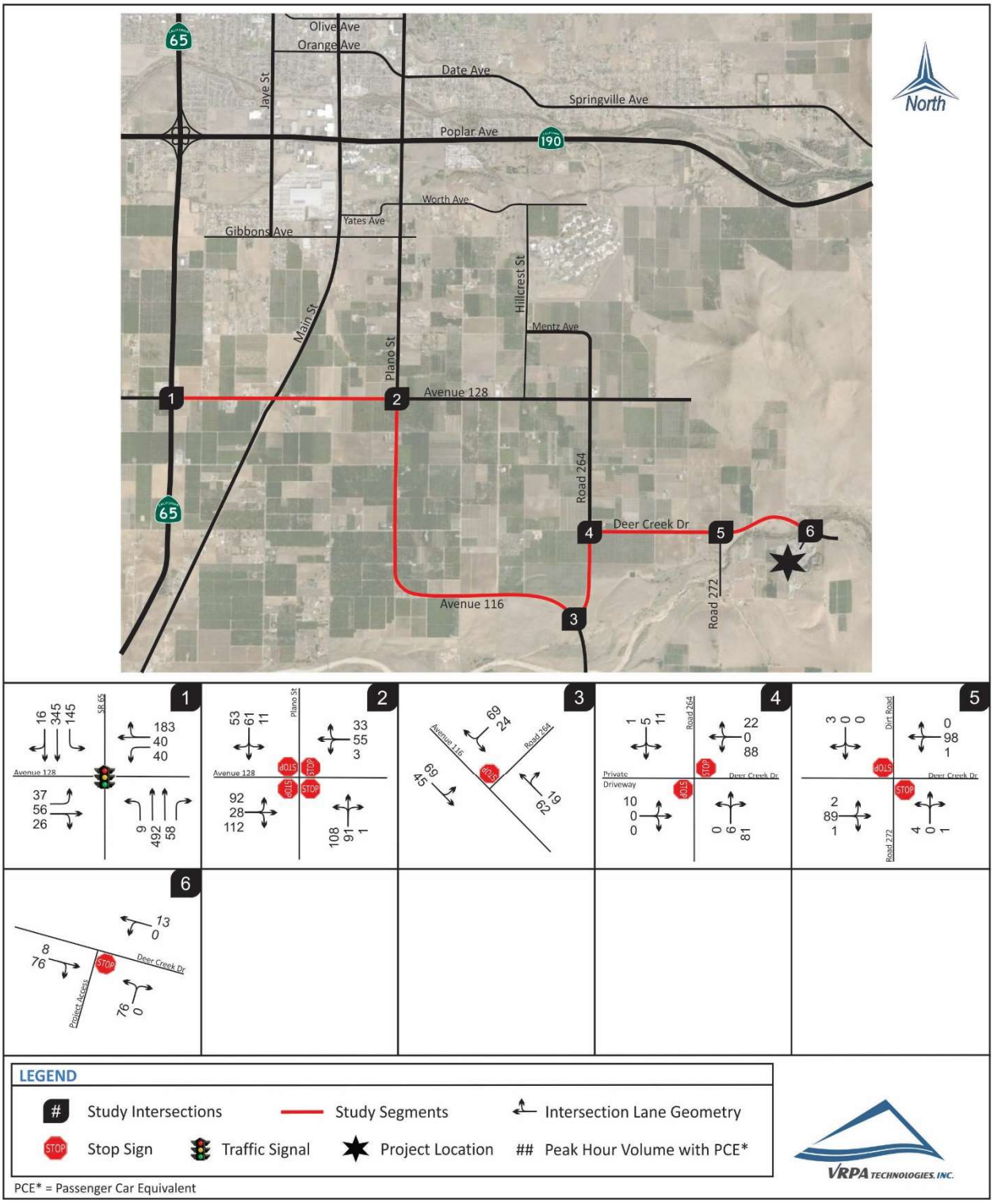
Deer Creek Rock Co., Inc. Expansion
Existing Plus Project AM Peak Hour Traffic

Figure 3-4



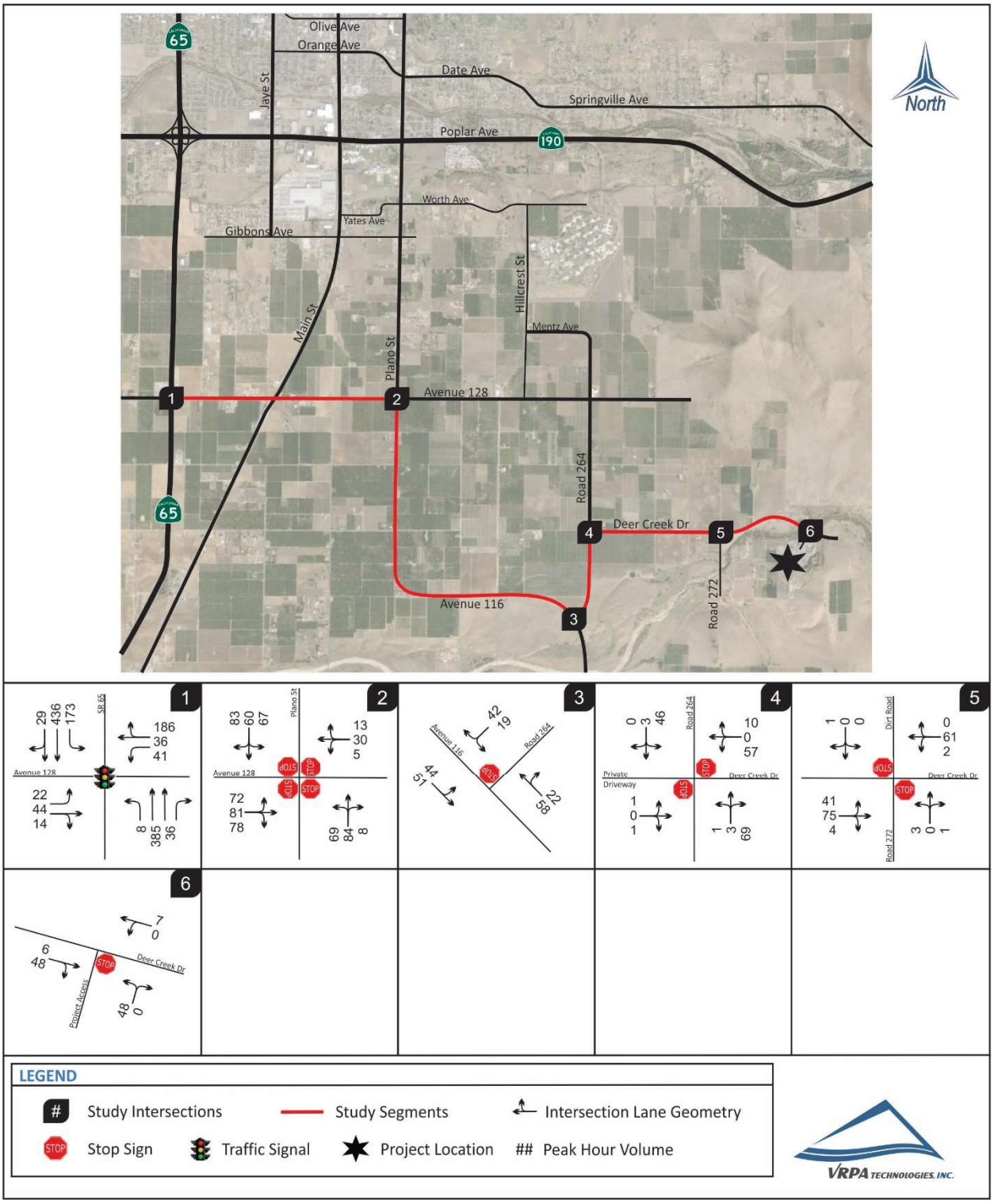
Deer Creek Rock Co., Inc. Expansion
Existing Plus Project PM Peak Hour Traffic

Figure 3-5



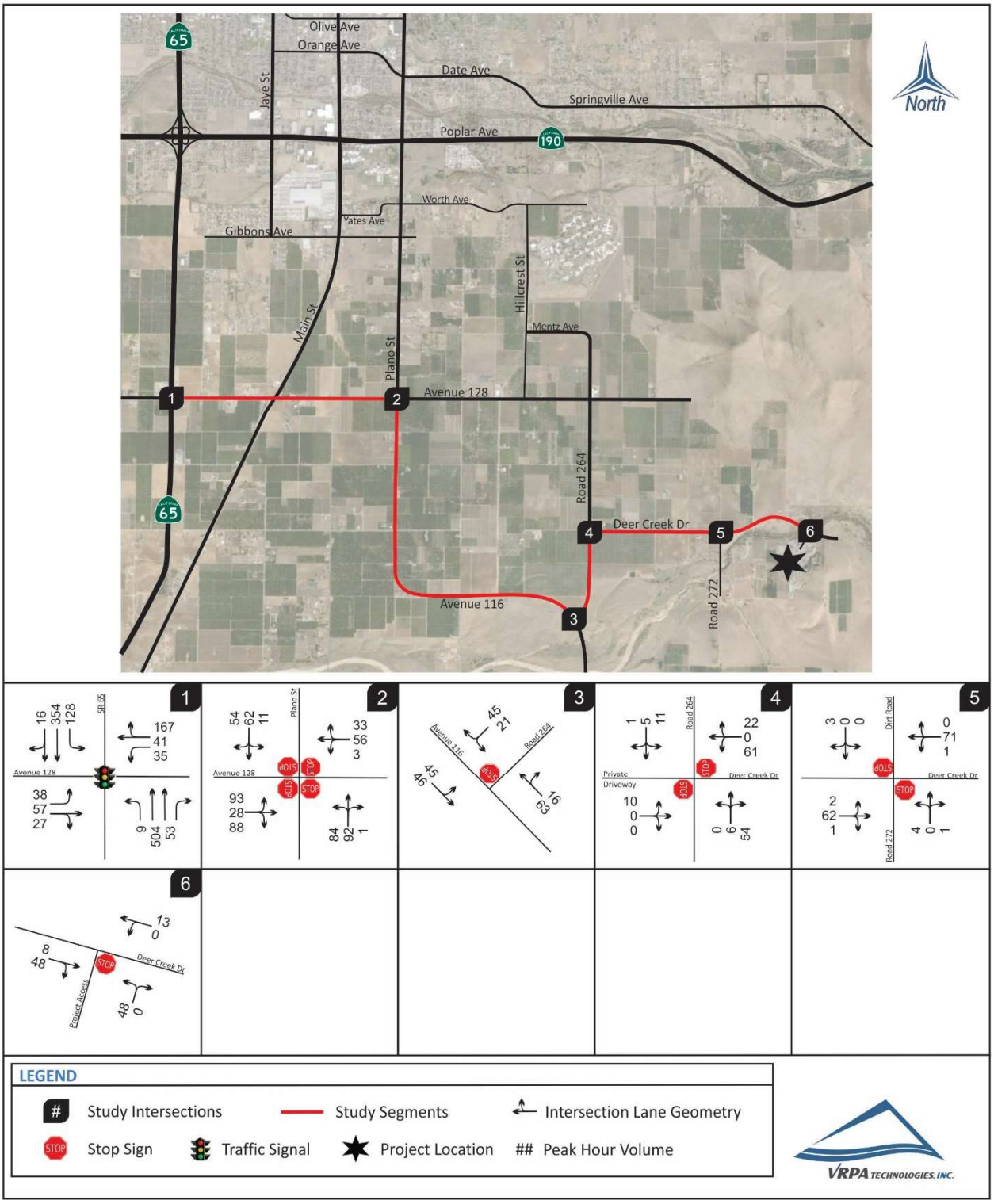
Deer Creek Rock Co., Inc. Expansion
Near-Term Without Project AM Peak Hour Traffic

Figure 3-6



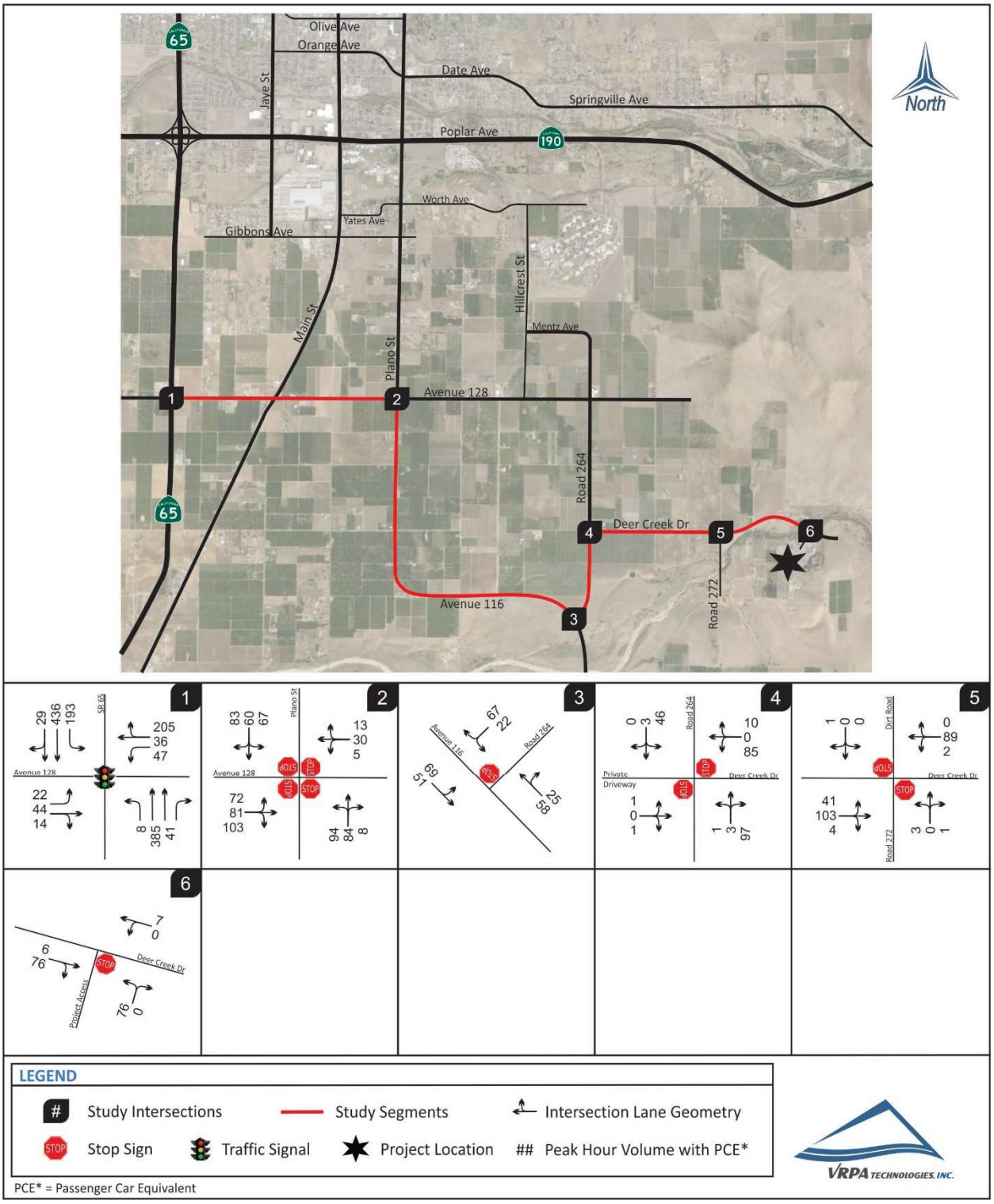
Deer Creek Rock Co., Inc. Expansion
Near-Term Without Project PM Peak Hour Traffic

Figure 3-7



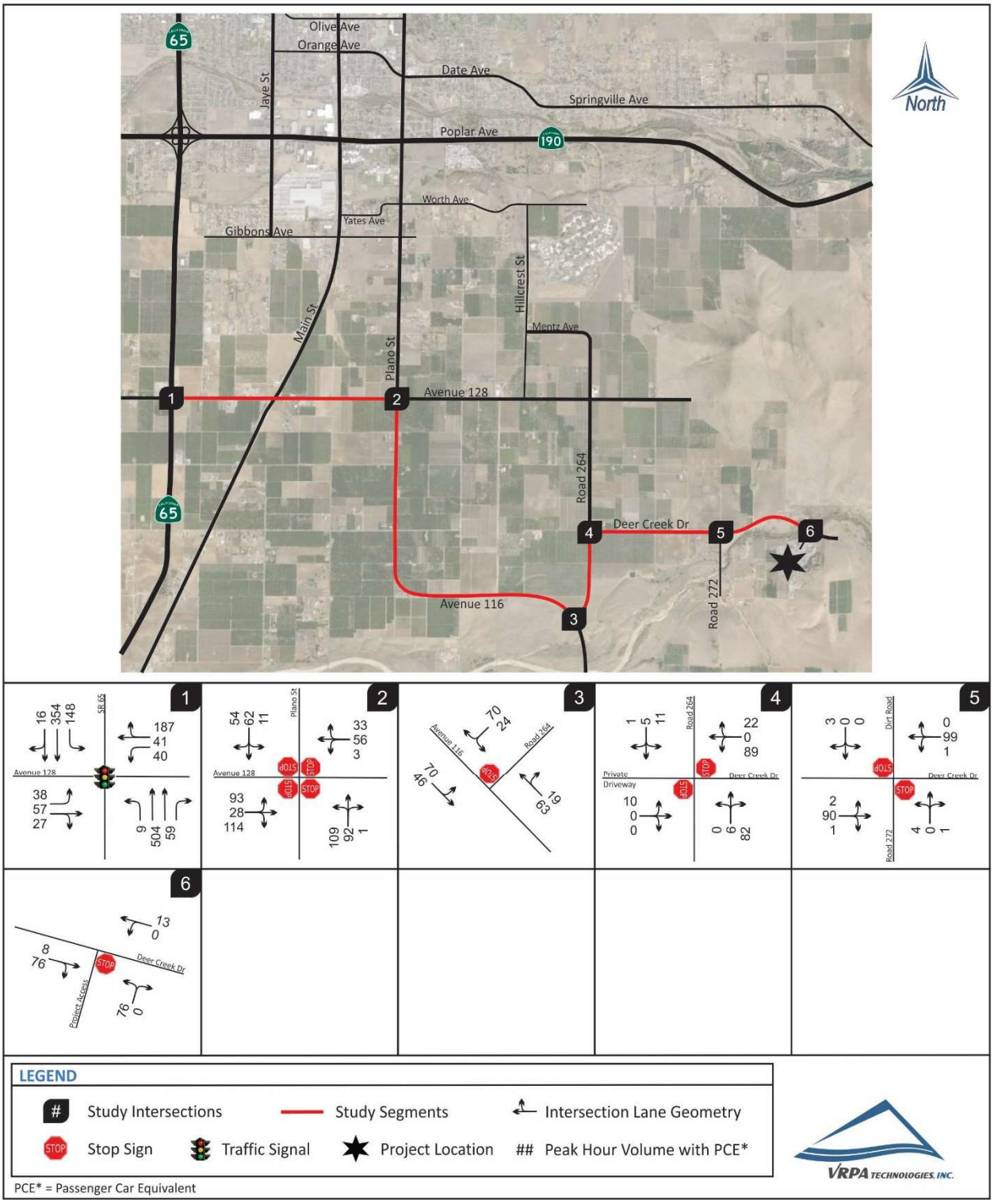
Deer Creek Rock Co., Inc. Expansion
Near-Term Plus Project AM Peak Hour Traffic

Figure 3-8



Deer Creek Rock Co., Inc. Expansion
Near-Term Plus Project PM Peak Hour Traffic

Figure 3-9



3.7 Cumulative Year 2040 Without Project Traffic Conditions

The impacts of the Project were analyzed considering future traffic conditions, approximately twenty (20) years after the assumed opening day of the Project, or in this case the year 2040. The levels of traffic expected in 2040 relate to the cumulative effect of traffic increases resulting from the implementation of the General Plans of local agencies, including Tulare County. The TCAG regional travel demonstrates a growth rate 0.5 to 2% per year. Traffic conditions in the Year 2040 was estimated using a 1.5% per year growth factor for background (ambient) growth along Tulare County facilities. A 2.5% per year growth factor was applied to all intersections along SR 65 which is consistent with Caltrans' SR 65 TCR.

Traffic conditions resulting from this scenario are shown in Figures 3-10 and 3-11.

3.8 Cumulative Year 2040 Plus Project Traffic Conditions

The addition of Project trips, which were distributed to the roadway system using the trip distribution percentages shown in Figure 3-1 (Section 3.3), were added to Cumulative 2040 Without Project traffic volumes. This leads to the results shown in Figures 3-12 and 3-13.

3.9 Impacts

3.9.1 *Intersection Capacity Analysis*

Table 3-2 shows intersections that are expected to fall short of desirable operating conditions for various scenarios. Potential mitigation measures are discussed in Chapter 4 of this report. Results of the analysis show that the Project will contribute to an unacceptable LOS at the intersection of SR 65 and Avenue 128 when comparing the Cumulative Year 2040 Without Project and Cumulative Year 2040 Plus Project scenarios.

3.9.2 *Queuing Analysis*

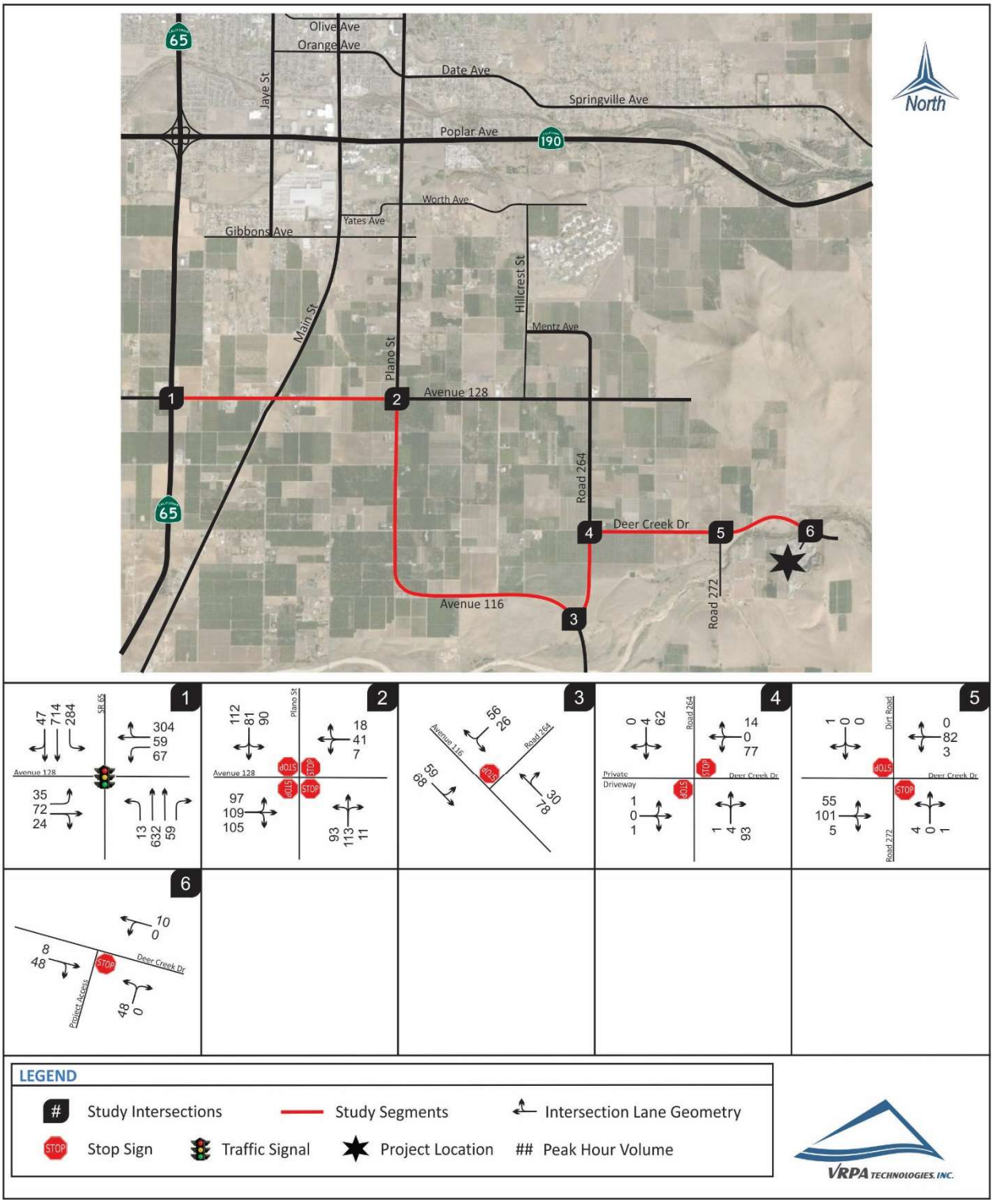
Table 3-3 provides a queue length summary for left and right turn lanes at the study intersections for various study scenarios. Queuing analysis was completed using Section 400 of Caltrans' Highway Design Manual.

3.9.3 *Roadway Segment Capacity Analysis*

Results of the segment analysis along the existing street and highway system are reflected in Table 3-4. The performance criteria used for evaluating volumes and capacities on the road and highway system for this study were estimated using the Modified Arterial Level of Service Tables included in Table 1-4 and Appendix A. Results of the analysis show that all of the study roadway segments are projected to operate at acceptable levels of service through the year 2040.

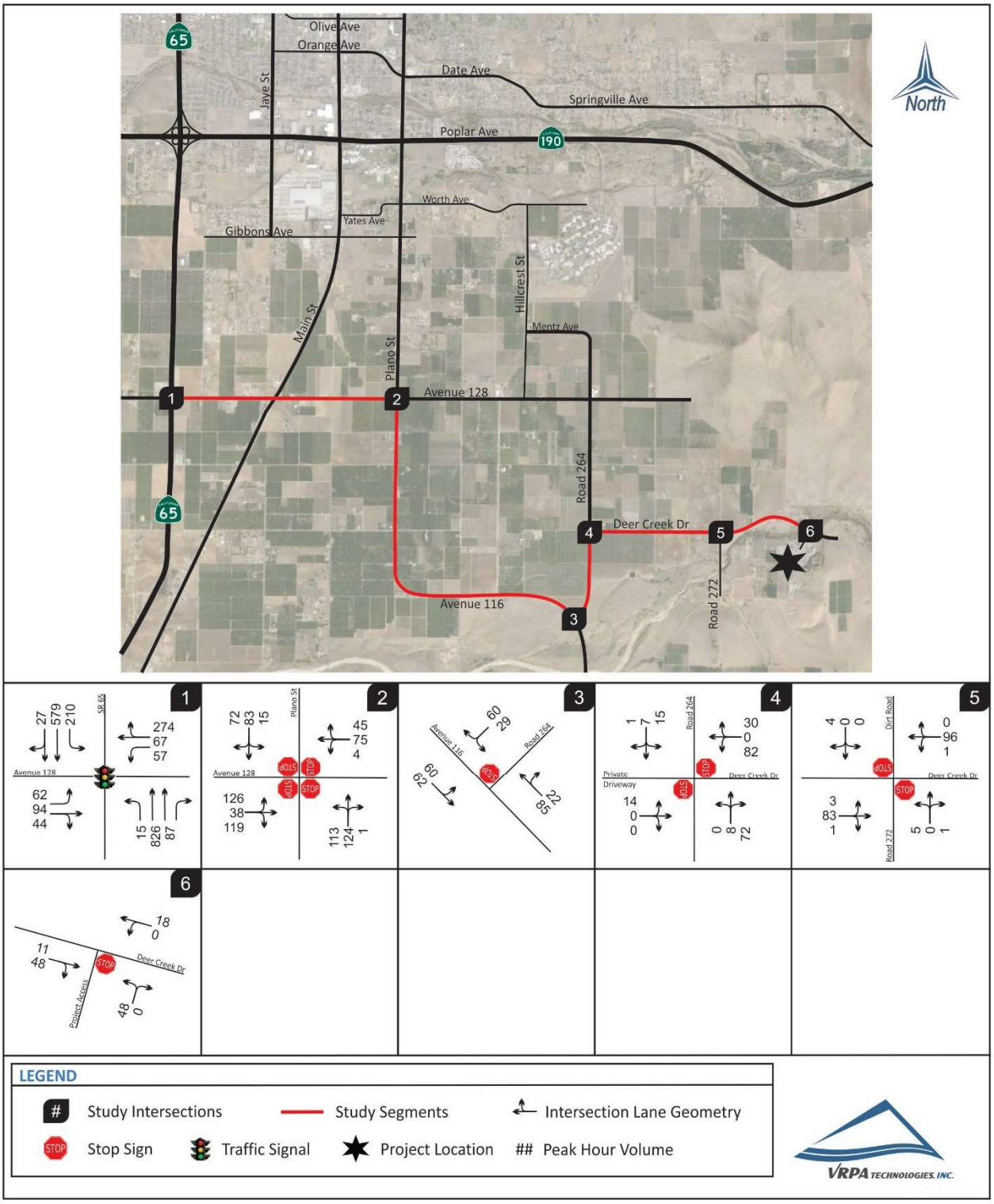
Deer Creek Rock Co., Inc. Expansion
Cumulative Year 2040 Without Project AM Peak Hour Traffic

Figure 3-10



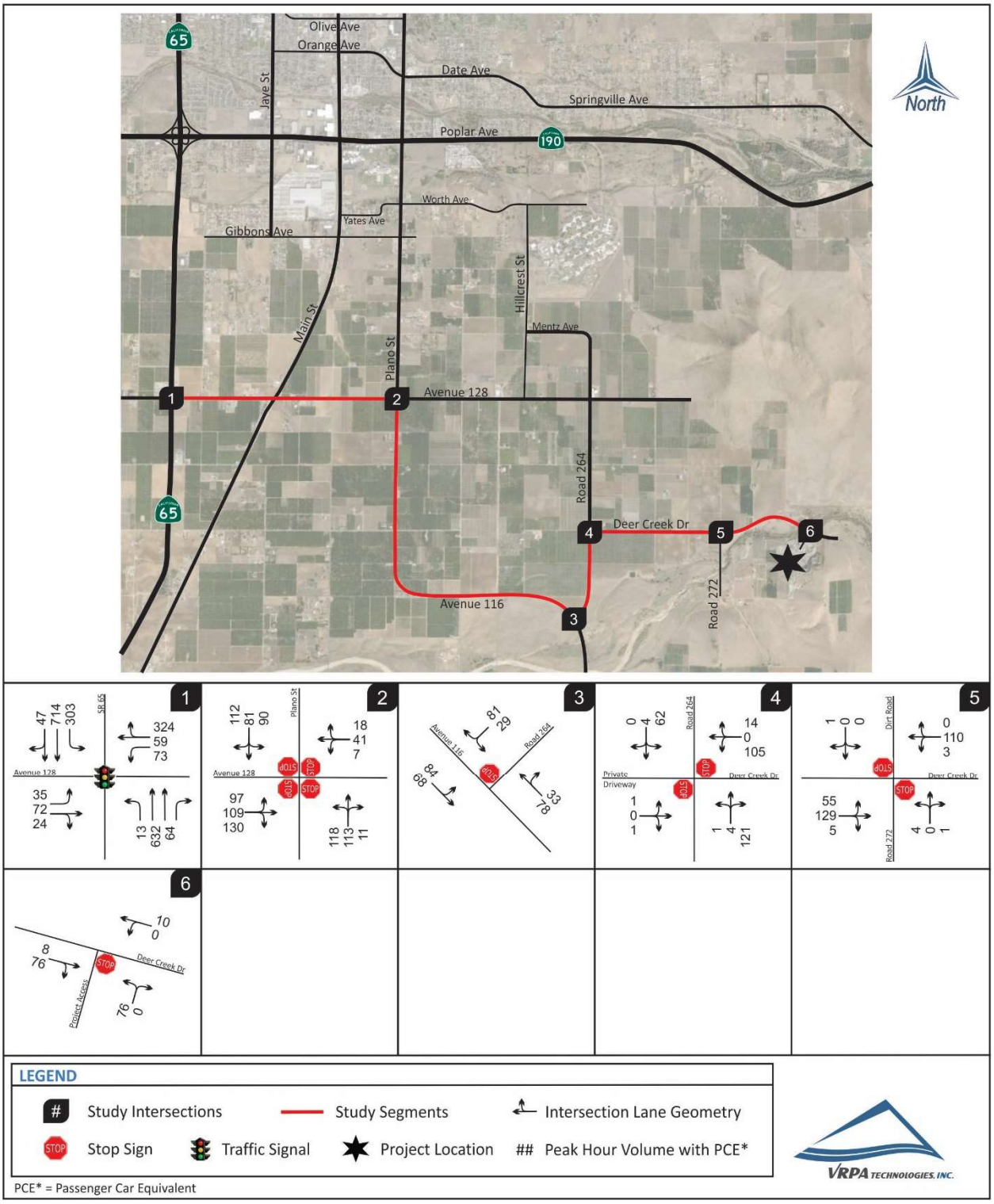
Deer Creek Rock Co., Inc. Expansion
Cumulative Year 2040 Without Project PM Peak Hour Traffic

Figure 3-11



Deer Creek Rock Co., Inc. Expansion
Cumulative Year 2040 Plus Project AM Peak Hour Traffic

Figure 3-12



Deer Creek Rock Co., Inc. Expansion
Cumulative Year 2040 Plus Project PM Peak Hour Traffic

Figure 3-13

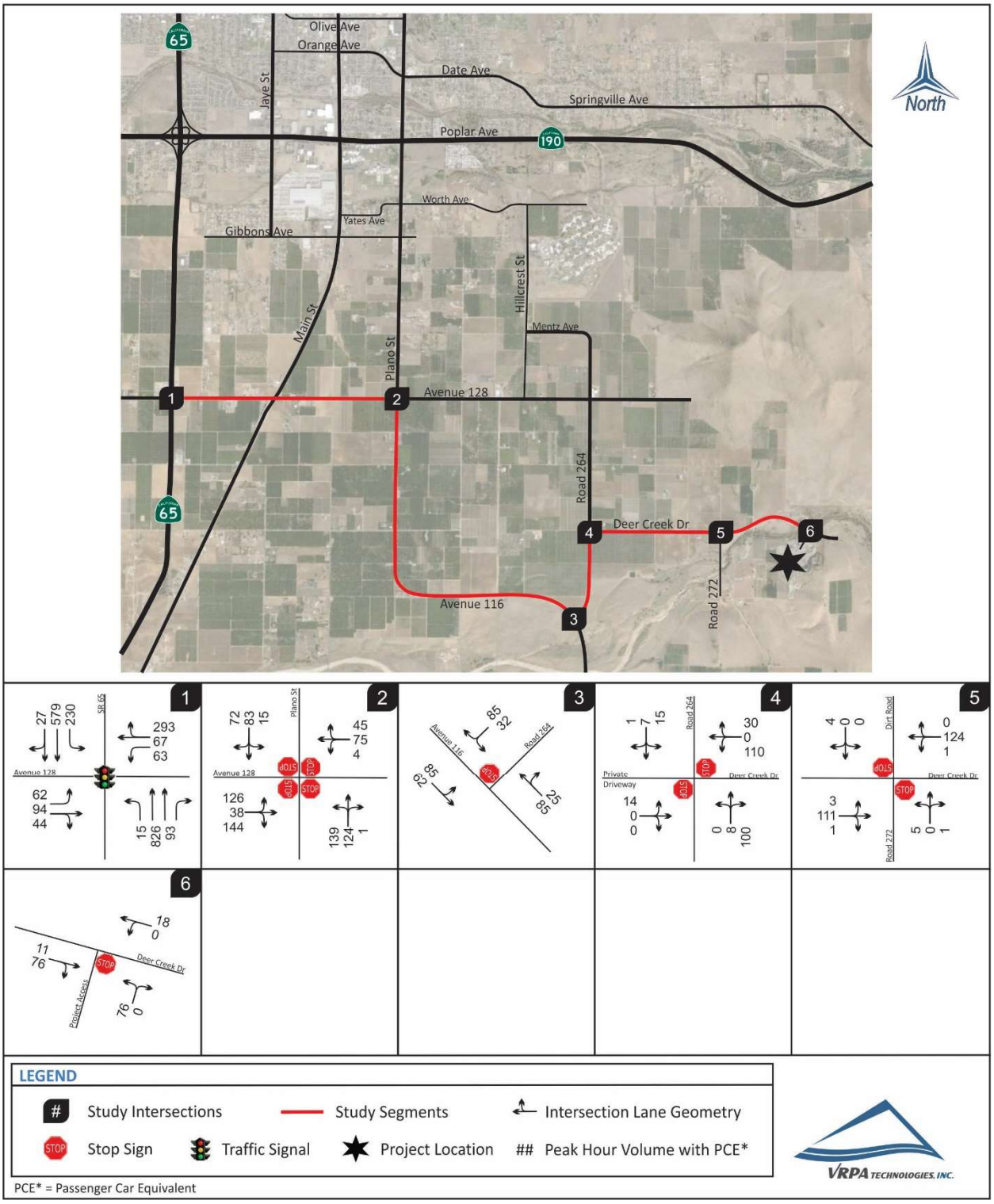


Table 3-2
Intersection Operations

INTERSECTION	CONTROL	TARGET LOS	PEAK HOUR	EXISTING PLUS PROJECT		NEAR-TERM WITHOUT PROJECT		NEAR-TERM PLUS PROJECT		CUMULATIVE YEAR 2040 WITHOUT PROJECT		CUMULATIVE YEAR 2040 PLUS PROJECT	
				DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS
1. SR 65 / Avenue 128	Signalized	C	AM	29.7	C	28.6	C	30.2	C	**43.6**	**D**	**47.9**	**D**
			PM	30.6	C	29.3	C	31.1	C	**43.7**	**D**	**47.5**	**D**
2. Plano Street / Avenue 128	All-Way Stop Sign	D	AM	13.0	B	12.0	B	13.1	B	20.6	C	24.3	C
			PM	10.5	B	10.0	A	10.6	B	13.0	B	14.5	B
3. Road 264 / Avenue 116	One-Way Stop Sign	D	AM	10.2	B	9.9	A	10.3	B	10.7	B	11.3	B
			PM	10.1	B	9.8	A	10.1	B	10.5	B	11.0	B
4. Road 264 / Deer Creek Drive	Two-Way Stop Sign	D	AM	10.9	B	10.3	B	10.9	B	11.3	B	12.1	B
			PM	10.0	B	9.5	A	10.0	B	10.0	B	10.6	B
5. Road 272 / Deer Creek Drive	One-Way Stop Sign	D	AM	10.6	B	10.2	B	10.7	B	11.1	B	11.7	B
			PM	10.7	B	10.0	B	10.7	B	10.7	B	11.6	B
6. Project Access / Deer Creek Drive	One-Way Stop Sign	D	AM	9.7	A	9.2	A	9.7	A	9.3	A	9.7	A
			PM	10.3	B	9.6	A	10.3	B	9.6	A	10.4	B

DELAY is measured in seconds
LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

For signalized and all-way stop controlled intersections, delay results show the average for the entire intersection.
For one-way and two-way stop controlled intersections, delay results show the delay for the worst movement.

Table 3-3
Queuing Operations

INTERSECTION	EXISTING QUEUE STORAGE LENGTH (ft)		EXISTING PLUS PROJECT		NEAR-TERM WITHOUT PROJECT		NEAR-TERM PLUS PROJECT		CUMULATIVE YEAR 2040 WITHOUT PROJECT		CUMULATIVE YEAR 2040 PLUS PROJECT	
			AM Queue	PM Queue	AM Queue	PM Queue	AM Queue	PM Queue	AM Queue	PM Queue	AM Queue	PM Queue
SR 65 / Avenue 128	NB Left	550	7	8	7	8	7	8	11	13	11	13
	NB Right	200	34	48	30	44	34	49	49	73	53	78
	SB Left	450	158	121	144	107	161	123	237	175	253	192
	EB Left	475	18	31	18	32	18	32	29	52	29	52
	WB Left	350	38	33	34	29	39	33	56	48	61	53

Queue is measured in feet / **BOLD** denotes exceedance

Table 3-4
Segment Operations

STREET SEGMENT	SEGMENT DESCRIPTION	DIRECTION	TARGET LOS	PEAK HOUR	EXISTING PLUS PROJECT		NEAR-TERM WITHOUT PROJECT		NEAR-TERM PLUS PROJECT		CUMULATIVE YEAR 2040 WITHOUT PROJECT		CUMULATIVE YEAR 2040 PLUS PROJECT	
					VOLUME	LOS	VOLUME	LOS	VOLUME	LOS	VOLUME	LOS	VOLUME	LOS
Avenue 128														
SR 65 to Plano Street	2 Lanes Undivided	EB	D	AM	272	B	253	B	278	B	415	B	440	B
				PM	258	B	239	B	264	B	391	B	417	B
		WB		AM	281	B	262	B	288	B	430	B	455	B
				PM	262	B	243	B	268	B	398	B	423	B
Plano Street - Avenue 116														
Avenue 128 to Road 264	2 Lanes Undivided	NB / WB	D	AM	184	B	161	B	187	B	217	B	243	B
				PM	200	B	178	B	203	B	239	B	264	B
		SB / EB		AM	166	B	143	B	168	B	193	B	218	B
				PM	176	B	153	B	178	B	206	B	232	B
Road 264														
Deer Creek Drive and Avenue 116	2 Lanes Undivided	NB	D	AM	100	B	73	B	101	B	98	B	126	B
				PM	88	B	61	B	89	B	82	B	110	B
		SB		AM	88	B	61	B	89	B	82	B	110	B
				PM	93	B	66	B	94	B	89	B	117	B
Deer Creek Drive														
Road 264 to Road 272	2 Lanes Undivided	EB	D	AM	146	B	120	B	148	B	161	B	189	B
				PM	92	B	65	B	93	B	87	B	115	B
		WB		AM	92	B	65	B	93	B	87	B	115	B
				PM	105	B	78	B	106	B	105	B	133	B
Road 272 to Project Access	2 Lanes Undivided	EB	D	AM	103	B	76	B	104	B	103	B	131	B
				PM	90	B	63	B	91	B	85	B	113	B
		WB		AM	90	B	63	B	91	B	85	B	113	B
				PM	99	B	72	B	100	B	97	B	125	B

LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

3.10 Truck Operational Maneuvers

The geometric design of an intersection influences roadway safety and operational performance as well as defines how vehicles proceed through an intersection. Truck dimensions and operating characteristics affect the physical roadway infrastructure and should be appropriately considered in the geometric design and traffic operations of roads in the study area. Operational maneuvers for the Project's truck traffic was evaluated at left and right-turn movements at study intersections.

The American Association of State Highway and Transportation Official's (AASHTO) WB-67D design vehicle was used to assess the operational maneuvers of Project truck traffic. As noted in the National Cooperative Highway Research Program (NCHRP) Report 505, swept paths (path of the outside front tractor tire and the inside rear trailer tire) for the WB-67D design vehicle are so great that trucks cannot make a 90 degree right turn from one two-lane road to another while remaining within a 12 ft lane for turning radii of 75 ft. or less.[1] In these cases, trucks will encroach on the roadway shoulder or an opposing lane. Figures 3-14a through 3-17b depict the left and right turning maneuvers at study intersections which were developed using the AutoTURN software program. Results indicate that Project truck traffic may slightly encroach on an opposing lane while conducting turning maneuvers at the Plano Street and Avenue 128, Road 264 and Avenue 116, and Road 264 and Deer Creek Drive intersections.

1 NCHRP Report 505, Review of Truck Characteristics as Factors in Roadway Design.

Deer Creek Rock Co., Inc. Expansion
WB-67D Turning Maneuvers at SR 65 / Avenue 128 - Northbound Right

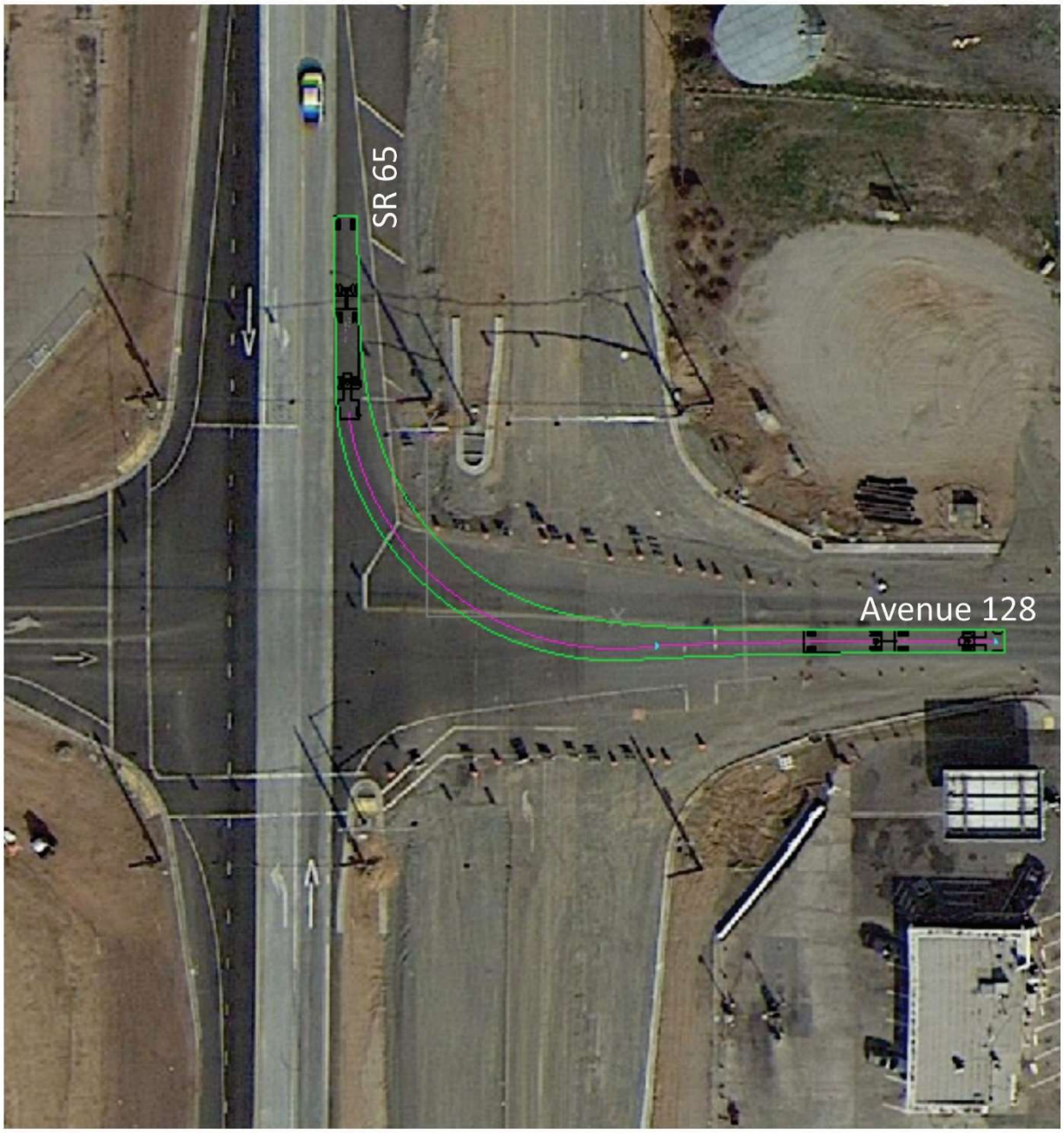
Figure 3-14a

North

VRPA TECHNOLOGIES, INC.

Deer Creek Rock Co., Inc. Expansion **Figure 3-14b**

WB-67D Turning Maneuvers at SR 65 / Avenue 128 - Southbound Left



North

VRPA TECHNOLOGIES, INC.

Deer Creek Rock Co., Inc. Expansion
WB-67D Turning Maneuvers at SR 65 / Avenue 128 - Westbound Left/Right

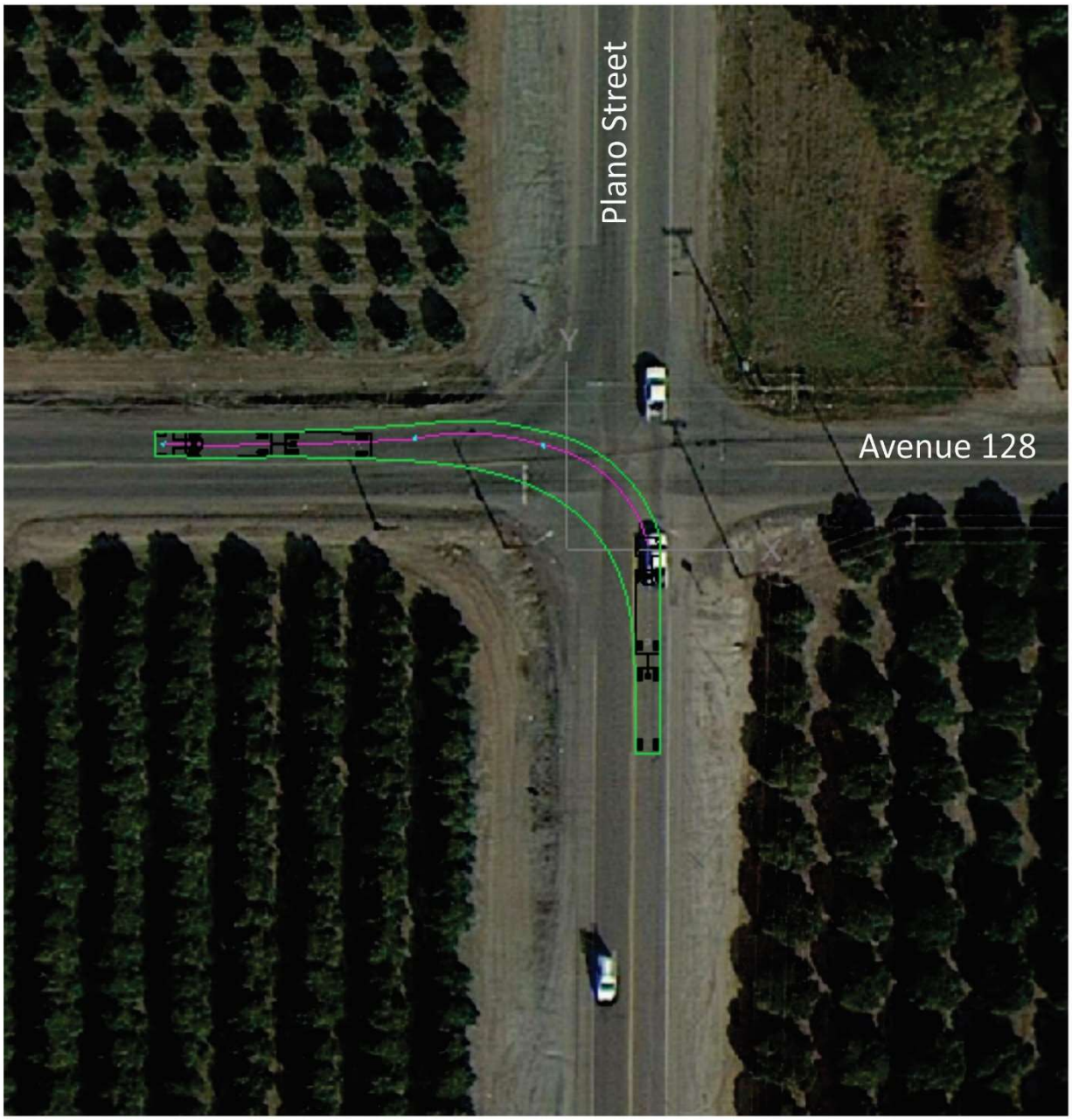
Figure 3-14c

North

VRPA TECHNOLOGIES, INC.

Deer Creek Rock Co., Inc. Expansion
WB-67D Turning Maneuvers at Plano Street / Avenue 128 - Northbound Left

Figure 3-15a

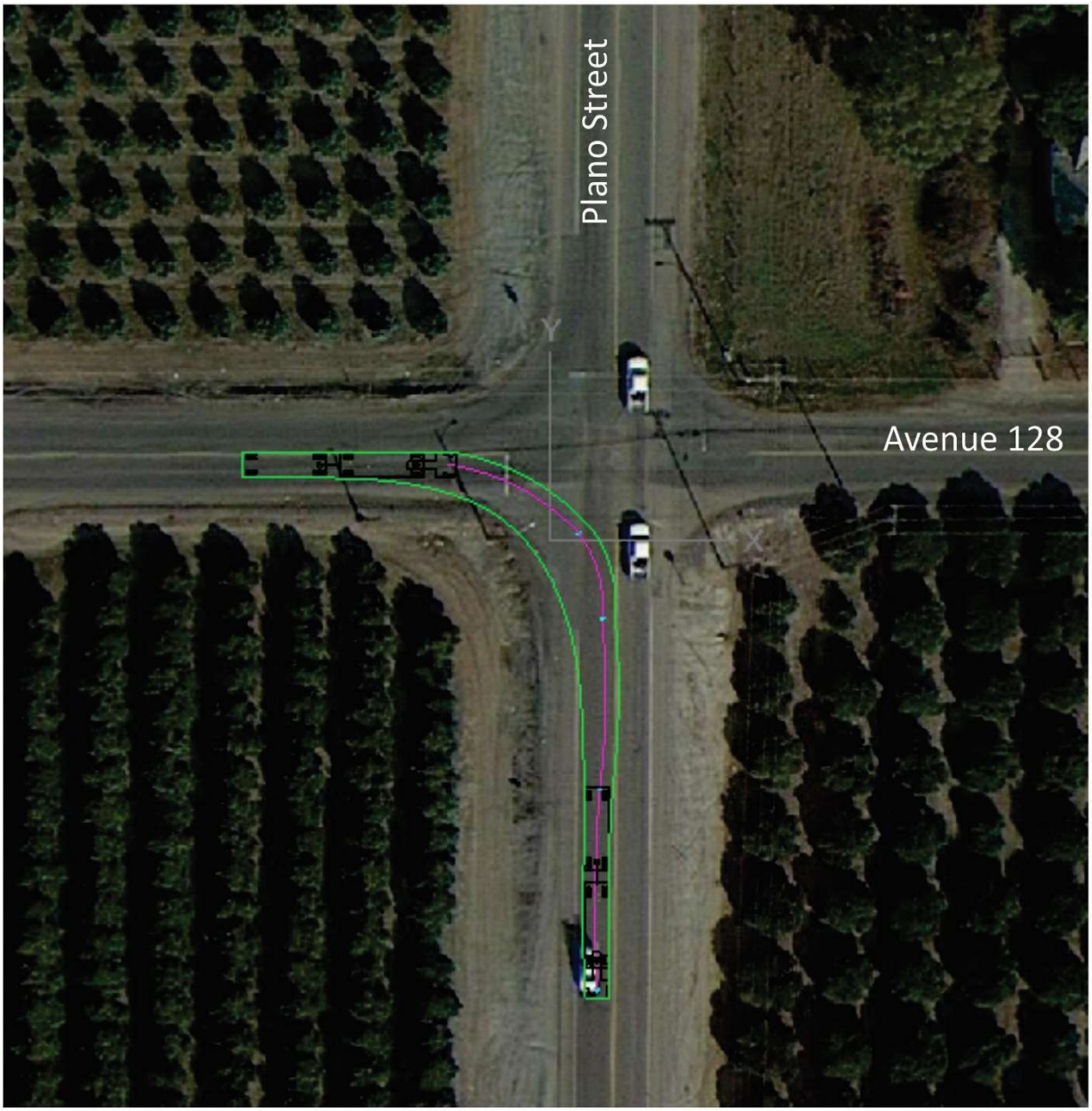


North

VRPA TECHNOLOGIES, INC.

Deer Creek Rock Co., Inc. Expansion
WB-67D Turning Maneuvers at Plano Street / Avenue 128 - Eastbound Right

Figure 3-15b



North

VRPA TECHNOLOGIES, INC.

Deer Creek Rock Co., Inc. Expansion
WB-67D Turning Maneuvers at Road 264 / Avenue 116 - Northbound Right

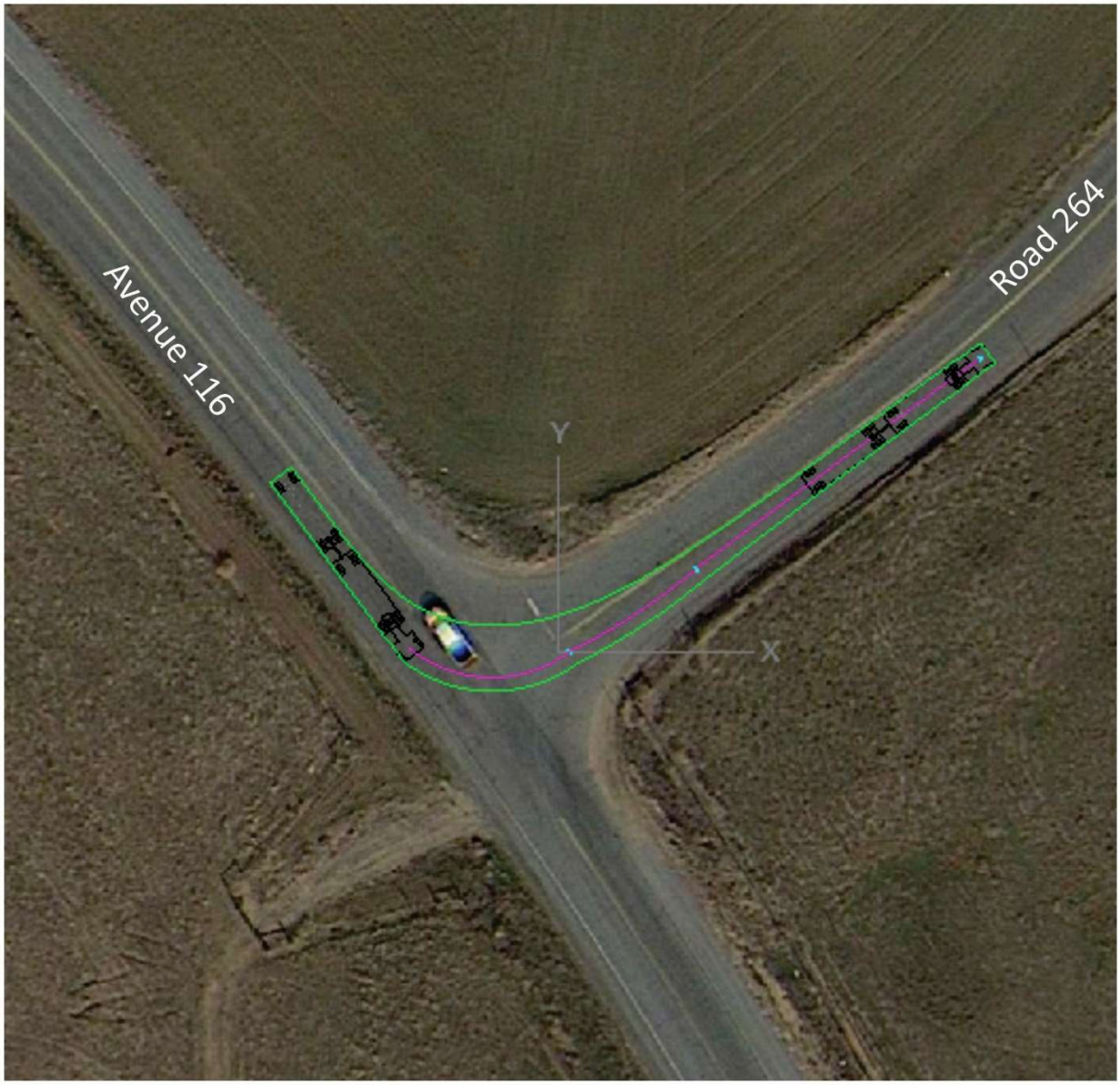
Figure 3-16a

North

VRPA TECHNOLOGIES, INC.

Deer Creek Rock Co., Inc. Expansion
WB-67D Turning Maneuvers at Road 264 / Avenue 116 - Southbound Left

Figure 3-16b

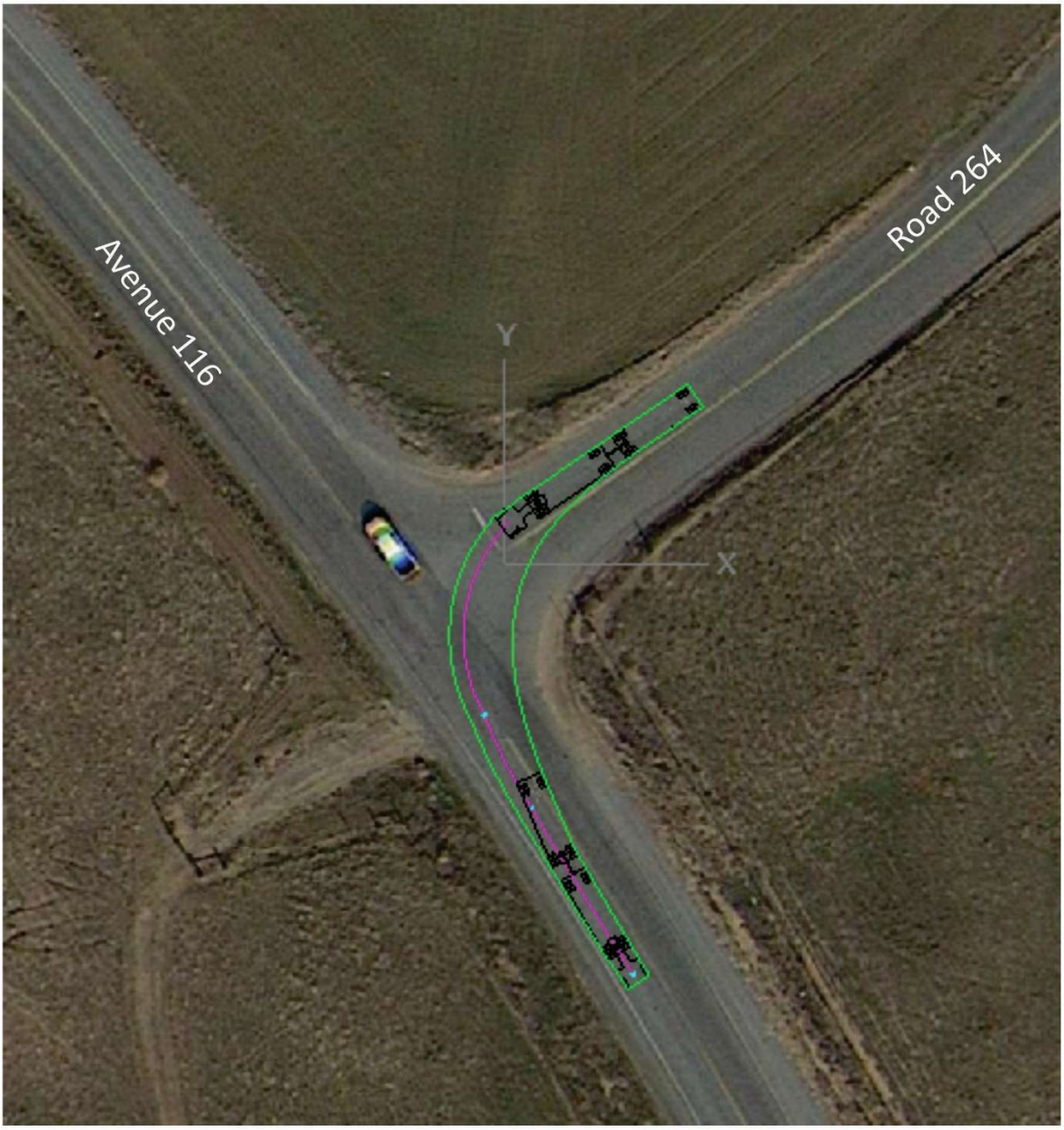


North

VRPA TECHNOLOGIES, INC.

Deer Creek Rock Co., Inc. Expansion **Figure 3-16c**

WB-67D Turning Maneuvers at Road 264 / Avenue 116 - Westbound Left

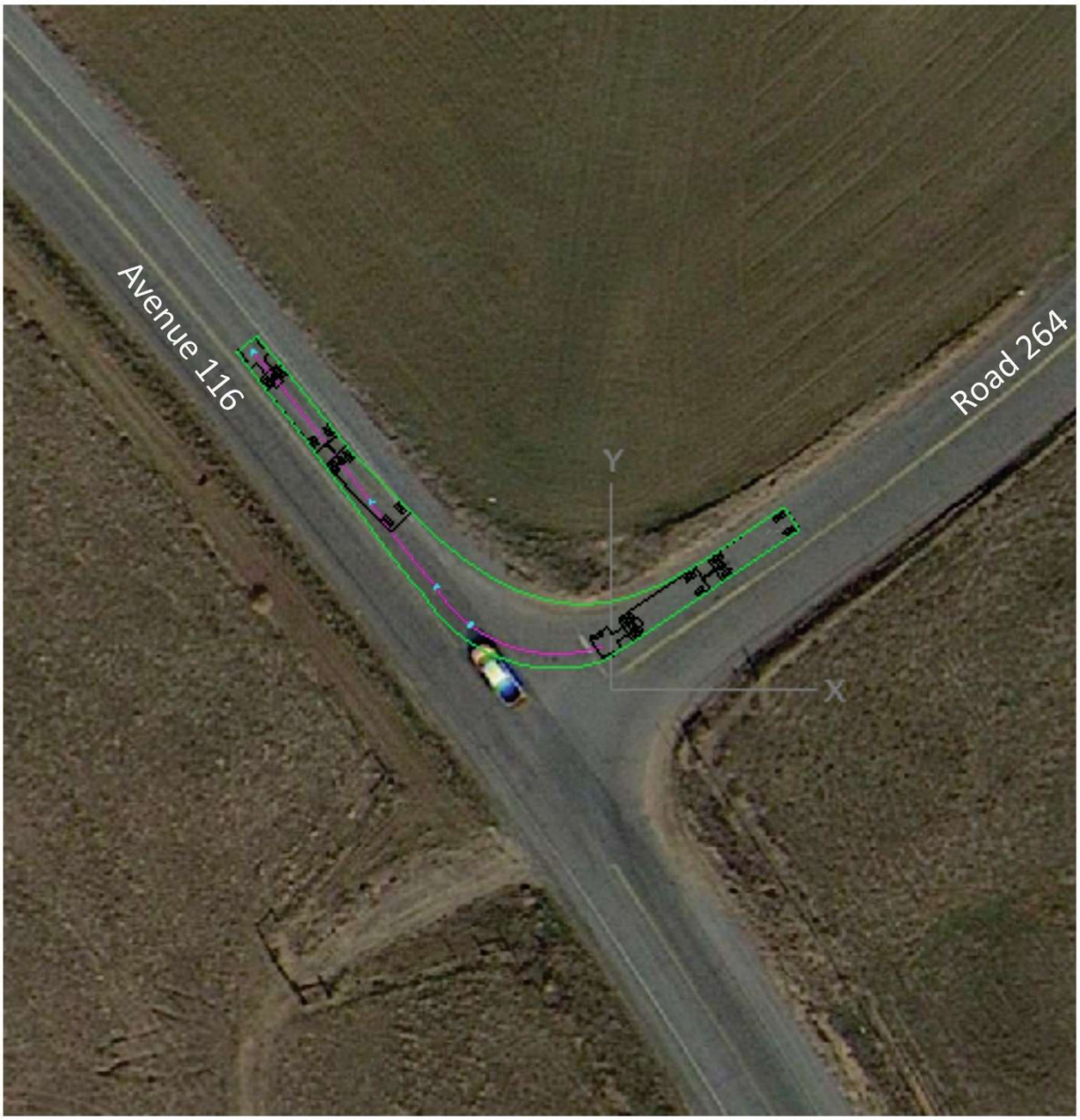


North

VRPA TECHNOLOGIES, INC.

Deer Creek Rock Co., Inc. Expansion
WB-67D Turning Maneuvers at Road 264 / Avenue 116 - Westbound Right

Figure 3-16d



North

VRPA TECHNOLOGIES, INC.

Deer Creek Rock Co., Inc. Expansion **Figure 3-17a**

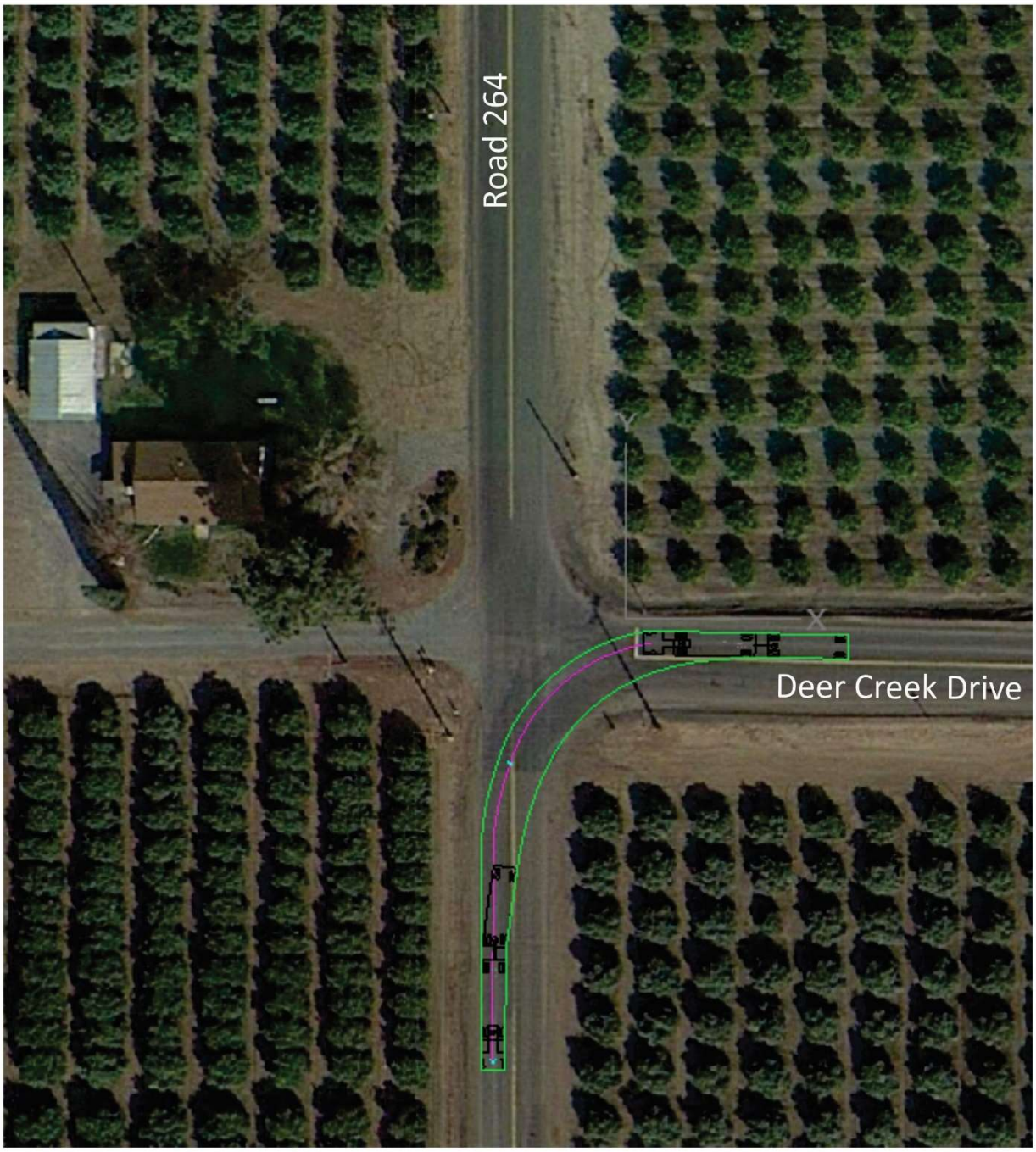
WB-67D Turning Maneuvers at Road 264 / Deer Creek Drive - Northbound Right

North

VRPA TECHNOLOGIES, INC.

Deer Creek Rock Co., Inc. Expansion
WB-67D Turning Maneuvers at Road 264 / Deer Creek Drive - Westbound Left

Figure 3-17b



North

VRPA TECHNOLOGIES, INC.

4.0 Mitigation

This chapter describes potential improvements to mitigate the traffic impacts of the Project. Described below are potential improvements at study area intersections for various scenarios. The proposed Project will be required to contribute a fair-share towards the costs of improvements that are identified for the Cumulative Year 2040 scenarios.

4.1 Recommended Improvements

INTERSECTIONS

✓ SR 65 at Avenue 128

Recommended improvements to achieve acceptable levels of service:

- Cumulative Year 2040 Without Project and Plus Project scenarios:
  - Widen the westbound approach to 1 left turn lane, 1 through lane, and 1 right turn lane with overlap phasing (adding 1 right turn)

The improvements identified above for the Cumulative Year 2040 Without Project and Plus Project scenarios are sufficient to meet the existing Measures of Effectiveness (MOE) of the intersection.

POST-MITIGATION LEVEL OF SIGNIFICANCE

The level of service resulting from the potential improvements identified above is shown in Table 4-1 for study area intersections. The resulting Cumulative Year 2040 lane geometry is shown in Figure 4-1.

In addition to the proposed improvements identified above, Table 4-2 identifies left turn and right turn pocket lengths required for the Cumulative Year 2040 scenario. The determination of the recommended storage length was determined by the queuing analysis and recommendations of storage lengths found in Chapter 400 of Caltrans' Highway Design Manual. The left turn and right turn pocket length do not include deceleration lengths.

Table 4-1
Intersection Operations with Mitigation

INTERSECTION	CONTROL	TARGET LOS	PEAK HOUR	CUMULATIVE YEAR 2040 WITHOUT PROJECT		CUMULATIVE YEAR 2040 PLUS PROJECT	
				DELAY	LOS	DELAY	LOS
1. SR 65 / Avenue 128	Signalized	C	AM	28.3	C	30.0	C
			PM	30.3	C	32.2	C

DELAY is measured in seconds
LOS = Level of Service / **BOLD** denotes LOS standard has been exceeded

For signalized and all-way stop controlled intersections, delay results show the average for the entire intersection.

Deer Creek Rock Co., Inc. Expansion
Cumulative Year 2040 Lane Geometry

Figure 4-1

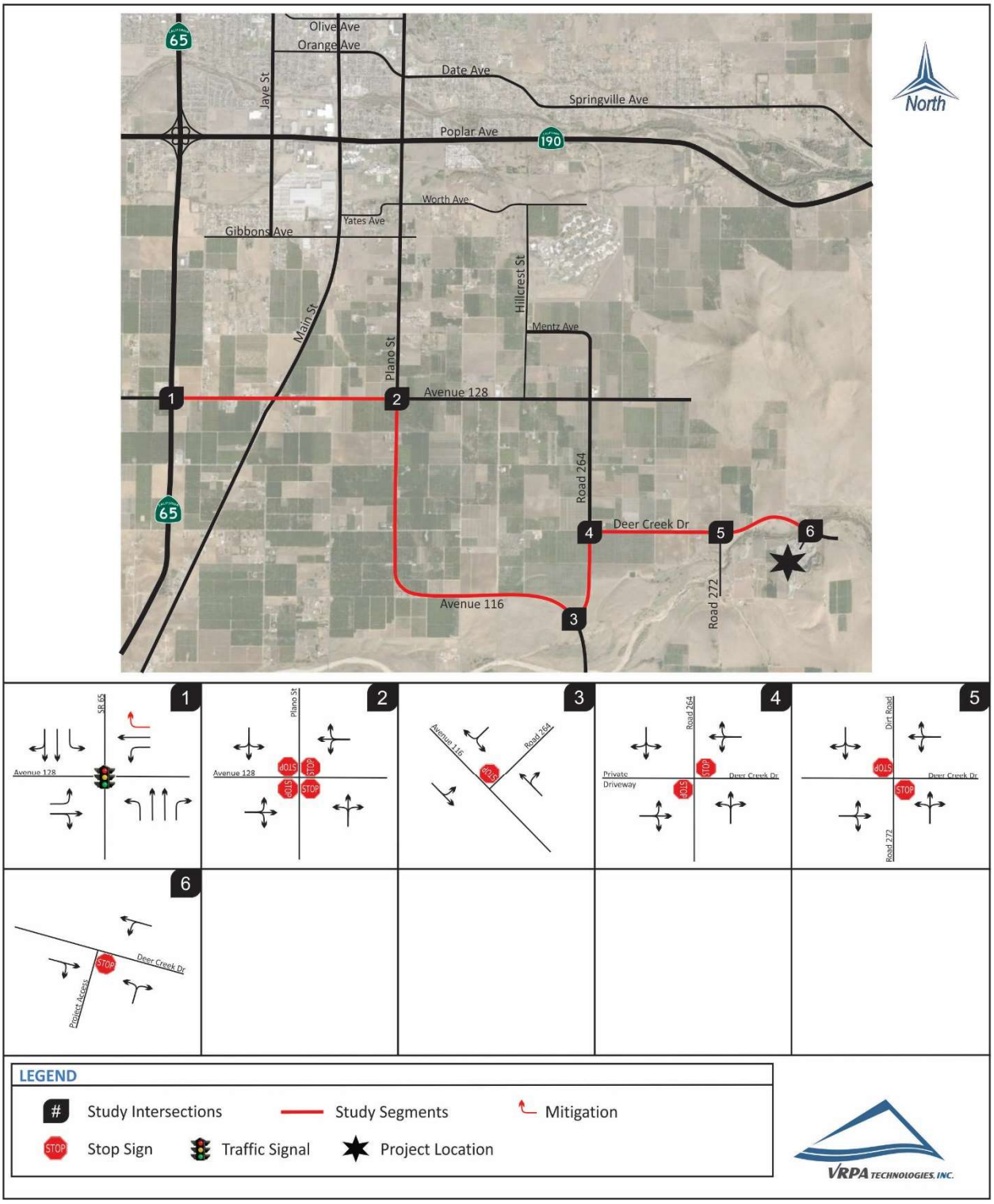


Table 4-2
Left Turn and Right Turn Storage Requirements

INTERSECTION	EXISTING STORAGE LENGTH (ft)		CUMULATIVE YEAR STORAGE LENGTH (ft)
SR 65 / Avenue 128	NB Left	550	550
	NB Right	200	200
	SB Left	450	450
	EB Left	475	475
	WB Left	350	350
	WB Right	--	**200**

Queue is measured in feet

4.2 Equitable Fair-Share Responsibility

The proposed Project will be required to contribute a fair-share towards the costs of improvements that are identified for the Cumulative Year 2040 scenarios. The intent of determining the equitable responsibility for the improvements identified above for the Cumulative Year 2040 scenarios, is to provide a starting point for early discussions to address traffic mitigation equitability and to calculate the equitable share for mitigating traffic impacts.

According to the Caltrans "Guide for the Preparation of Traffic Impact Studies, " the intent of determining the equitable responsibility for mitigation measures is to provide a starting point for early discussions to address traffic mitigation equitability and to calculate the equitable share for mitigation traffic impacts. The formula used to calculate the equitable share responsibility to the study area is as follows:

Equitable Share = (Project Trips)/(Future Year Plus Approved Project Traffic - Existing Traffic)

Table 4-3 shows the equitable share responsibility to the study area. The equitable share responsibility shown in Table 4-3 is the result of LOS enhancements related to capacity.

Table 4-3
Equitable Fair-Share Responsibility

INTERSECTION	PEAK HOUR	EXISTING	PROJECT TRIPS	CUMULATIVE YEAR 2040 PLUS PROJECT	FAIR SHARE PERCENTAGE
SR 65 / Avenue 128	AM	1,375	52	2,360	5.3%
	PM	1,395	52	2,393	5.2%

APPENDIX A

Modified HCM-Based LOS Tables (Florida Tables)

TABLE 9

Generalized **Peak Hour Directional** Volumes for Florida's **Rural Undeveloped Areas** OR **Developed Areas Less Than 5,000 Population**[1]

03/14/2018

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Lanes	Median	B	C	D	E
1	Undivided	900	920	**	**
2	Divided	*	1,390	1,840	**
3	Divided	*	2,280	2,790	**

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
1	Divided	Yes	No	+5%
1	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding directional volumes in this table by 1.2

BICYCLE MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Rural Undeveloped

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	70	110	170
50-84%	60	120	180	580
85-100%	140	210	1,000	>1,000

Rural Developed

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	120	260	840
50-84%	100	240	720	1,000
85-100%	320	1,000	>1,000	**

PEDESTRIAN MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	120	460
50-84%	*	80	430	770
85-100%	180	520	860	>1,000

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Lanes	B	C	D	E
2	2,100	2,840	3,300	3,500
3	2,910	4,080	4,830	5,240
4	3,730	5,330	6,320	6,990

Freeway Adjustments

Auxiliary Lane
+ 1,000

UNINTERRUPTED FLOW HIGHWAYS

Rural Undeveloped

Lanes	Median	B	C	D	E
1	Undivided	270	490	840	1,690

Rural Developed

Lanes	Median	B	C	D	E
1	Undivided	610	930	1,260	1,690
2	Divided	1,770	2,560	3,080	3,300
3	Divided	2,660	3,850	4,620	4,950

Passing Lane Adjustments

Alter LOS B-D volumes in proportion to the passing lane length to the highway segment length

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
1	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

[1]Values shown are presented as peak hour directional volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual and the Transit Capacity and Quality of Service Manual.

[2] Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Planning Office
www.dot.state.fl.us/planning/systems/sm/los/default.shtm

TABLE 9
(continued)

Generalized **Peak Hour Directional** Volumes for Florida's **Rural Undeveloped Areas** OR **Developed Areas Less Than 5,000 Population**

03/14/2018

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities				Interrupted Flow Facilities				
	Freeways	Highways			Arterials		Bicycle		Pedestrian
		Undeveloped	Developed				Undeveloped	Developed	
ROADWAY CHARACTERISTICS									
Area type (urban, rural)	rural								
Number of through lanes (both dir.)	4-8	2	2	4-6	2	4-6	4	4	2
Posted speed (mph)	70	55	50	55	50	40	55	45	45
Free flow speed (mph)	75	60	55	60	55	45	60	50	50
Auxiliary Lanes (n, y)	n								
Median (d, u, twlt)				d					
Terrain (l,r)	l	l	l	l	l	l	l	l	l
% no passing zone		20	60						
Exclusive left turn lane impact (n, y)		[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)					n	y			
Facility length (mi)	18	10	5	5	2	2	4	2	2
Interchange Density (intch/mi)	0.17								
TRAFFIC CHARACTERISTICS									
Planning analysis hour factor (K)	0.090	0.090	0.090	0.090	0.090	0.090	0.095	0.095	0.095
Directional distribution factor (D)	0.55	0.55	0.55	0.55	0.55	0.55	0.57	0.57	0.57
Peak hour factor (PHF)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Base saturation flow rate (pcphpl)	2,400	1,700	1,700	2,200	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	12.0	5.0	5.0	5.0	3.0	3.0	6.0	3.5	3.0
Speed Adjustment Factor (SAF)	0.863			0.863					
Capacity Adjustment Factor (CAF)	0.852			0.852					
% left turns					12	12		12	12
% right turns					12	12		12	12
CONTROL CHARACTERISTICS									
Number of signals					3	5	2	4	4
Arrival type (1-6)					3	3	3	3	3
Signal type (a, c, p)					c	c	a	a	a
Cycle length (C)					100	100	60	90	90
Effective green ratio (g/C)					0.44	0.44	0.37	0.44	0.44
MULTIMODAL CHARACTERISTICS									
Paved shoulder/bicycle lane (n, y)							n, 50%, y	n, 50%, y	n
Outside lane width							t	t	t
Pavement condition							t	t	
Sidewalk (n, y)									n, 50%, y
Sidewalk/roadway separation (a, t, w)									t
Sidewalk protective barrier (n, y)									n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways				Arterials	Bicycle	Ped
		Two-Lane			Multi-Lane			
		Undeveloped		Developed				
	Density pc/mi/ln	ats	%tsf	%ffs	Density pc/mi/ln	%bffs	Score	Score
B	≤ 14	> 50	≤ 50	> 83.3	≤ 18	> 67	≤ 2.75	≤ 2.75
C	≤ 22	> 45	≤ 65	> 75.0	≤ 26	> 50	≤ 3.50	≤ 3.50
D	≤ 29	> 40	≤ 80	> 66.7	≤ 35	> 40	≤ 4.25	≤ 4.25
E	≤ 39	≤ 40	> 80	≤ 66.7	≤ 45	> 30	≤ 5.00	≤ 5.00

pc/mi/ln = passenger cars per mile per lane ats = average travel speed %tsf = percent time spent following
%ffs = percent free flow speed %bffs = percent base free flow speed

APPENDIX B

Traffic Count Data Worksheets

National Data & Surveying Services

Intersection Turning Movement Count

Location: SR 65 & Ave 128
City: Porterville
Control: Signalized

Project ID: 19-02019-001
Date: 3/28/2019

Total

NS/EW Streets:	SR 65				SR 65				Ave 128				Ave 128				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	0	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	51	5	0	20	123	6	0	4	9	2	0	11	10	14	0	258
7:15 AM	1	57	6	0	23	105	3	1	7	10	3	0	6	9	28	0	259
7:30 AM	1	94	6	0	28	112	6	0	8	7	0	0	8	11	37	0	318
7:45 AM	4	129	9	0	40	114	9	0	3	15	3	0	5	11	44	0	386
8:00 AM	2	70	11	0	48	97	5	1	3	13	2	0	8	8	50	0	318
8:15 AM	1	83	2	0	28	102	8	0	7	8	9	0	12	5	24	0	289
8:30 AM	3	63	4	0	27	92	6	0	6	8	2	0	9	10	23	0	253
8:45 AM	1	73	8	0	35	86	12	0	6	8	3	0	8	10	15	0	265
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	16	620	51	0	249	831	55	2	44	78	24	0	67	74	235	0	2346
APPROACH %'s :	2.33%	90.25%	7.42%	0.00%	21.90%	73.09%	4.84%	0.18%	30.14%	53.42%	16.44%	0.00%	17.82%	19.68%	62.50%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	8	376	28	0	144	425	28	1	21	43	14	0	33	35	155	0	1311
PEAK HR FACTOR :	0.500	0.729	0.636	0.000	0.750	0.932	0.778	0.250	0.656	0.717	0.389	0.000	0.688	0.795	0.775	0.000	0.849
	0.725				0.917				0.813				0.845				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	1	1	0	0	1	1	0	0	0	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	2	106	12	0	21	86	3	0	10	13	6	0	8	13	43	0	323
4:15 PM	2	122	6	0	25	100	2	0	10	8	3	0	3	8	22	0	311
4:30 PM	3	148	15	0	20	88	8	0	7	23	13	0	6	8	27	0	366
4:45 PM	2	116	9	0	25	71	3	0	10	12	4	0	8	11	40	0	311
5:00 PM	2	97	4	0	14	106	6	0	7	11	5	0	11	6	30	0	299
5:15 PM	3	100	11	0	24	90	3	0	11	21	2	0	4	14	24	0	307
5:30 PM	3	99	15	0	27	79	4	0	7	7	2	0	6	5	22	0	276
5:45 PM	0	93	4	0	20	98	3	0	6	8	2	0	3	5	19	0	261
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	17	881	76	0	176	718	32	0	68	103	37	0	49	70	227	0	2454
APPROACH %'s :	1.75%	90.45%	7.80%	0.00%	19.01%	77.54%	3.46%	0.00%	32.69%	49.52%	17.79%	0.00%	14.16%	20.23%	65.61%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	9	492	42	0	91	345	16	0	37	56	26	0	25	40	132	0	1311
PEAK HR FACTOR :	0.750	0.831	0.700	0.000	0.910	0.863	0.500	0.000	0.925	0.609	0.500	0.000	0.781	0.769	0.767	0.000	0.895
	0.818				0.890				0.692				0.770				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Plano St & Ave 128
City: Porterville
Control: 4-Way Stop

Project ID: 19-02019-002
Date: 3/28/2019

Total

NS/EW Streets:	Plano St				Plano St				Ave 128				Ave 128				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	2	11	0	0	1	4	24	0	6	10	7	0	0	7	2	0	74
7:15 AM	10	11	2	0	9	11	25	0	14	18	12	0	1	6	2	0	121
7:30 AM	13	27	1	0	12	11	22	0	16	19	9	0	4	11	3	0	148
7:45 AM	11	31	3	0	18	9	20	0	28	29	16	0	0	10	5	0	180
8:00 AM	7	11	1	0	17	22	16	0	16	17	11	0	0	5	1	0	124
8:15 AM	4	14	3	0	19	17	24	0	11	15	10	0	1	4	4	0	126
8:30 AM	6	12	1	0	13	15	21	0	10	11	12	0	2	4	0	0	107
8:45 AM	5	11	1	0	11	20	18	0	11	12	15	0	1	5	2	0	112
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	58	128	12	0	100	109	170	0	112	131	92	0	9	52	19	0	992
APPROACH %'s :	29.29%	64.65%	6.06%	0.00%	26.39%	28.76%	44.85%	0.00%	33.43%	39.10%	27.46%	0.00%	11.25%	65.00%	23.75%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	35	83	8	0	66	59	82	0	71	80	46	0	5	30	13	0	578
PEAK HR FACTOR :	0.673	0.669	0.667	0.000	0.868	0.670	0.854	0.000	0.634	0.690	0.719	0.000	0.313	0.682	0.650	0.000	0.803
	0.700				0.863				0.675				0.667				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	12	25	1	0	2	14	12	0	18	6	7	0	1	20	19	0	137
4:15 PM	9	28	0	0	4	15	9	0	18	14	13	0	1	17	7	0	135
4:30 PM	14	22	0	0	3	16	17	0	25	4	11	0	1	9	5	0	127
4:45 PM	9	16	0	0	2	16	15	0	31	4	13	0	0	9	2	0	117
5:00 PM	8	12	0	0	4	13	21	0	24	6	6	0	0	6	3	0	103
5:15 PM	7	19	0	0	3	18	15	0	19	3	10	0	0	6	3	0	103
5:30 PM	6	16	0	0	4	11	15	0	19	6	4	0	1	4	2	0	88
5:45 PM	3	12	0	0	0	14	22	0	14	7	2	0	0	1	1	0	76
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	68	150	1	0	22	117	126	0	168	50	66	0	4	72	42	0	886
APPROACH %'s :	31.05%	68.49%	0.46%	0.00%	8.30%	44.15%	47.55%	0.00%	59.15%	17.61%	23.24%	0.00%	3.39%	61.02%	35.59%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	44	91	1	0	11	61	53	0	92	28	44	0	3	55	33	0	516
PEAK HR FACTOR :	0.786	0.813	0.250	0.000	0.688	0.953	0.779	0.000	0.742	0.500	0.846	0.000	0.750	0.688	0.434	0.000	0.942
	0.895				0.868				0.854				0.569				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Ave 116 & Rd 264
City: Porterville
Control: 1-Way Stop(WB)

Project ID: 19-02019-003
Date: 3/28/2019

Total

NS/EW Streets:	Ave 116				Ave 116				Rd 264				Rd 264				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	3	1	0	3	11	0	0	0	0	0	0	0	0	1	0	19
7:15 AM	0	10	2	0	3	12	0	0	0	0	0	0	1	0	2	0	30
7:30 AM	0	22	7	0	5	14	0	0	0	0	0	0	4	0	0	0	52
7:45 AM	0	19	5	0	3	12	0	0	0	0	0	0	3	0	3	0	45
8:00 AM	0	6	5	0	1	12	0	0	0	0	0	0	7	0	3	0	34
8:15 AM	0	9	4	0	1	12	0	0	0	0	0	0	3	0	0	0	29
8:30 AM	0	11	3	0	4	12	0	0	0	0	0	0	5	0	1	0	36
8:45 AM	0	6	2	0	0	13	0	0	0	0	0	0	4	0	1	0	26
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	86	29	0	20	98	0	0	0	0	0	0	27	0	11	0	271
APPROACH %'s :	0.00%	74.78%	25.22%	0.00%	16.95%	83.05%	0.00%	0.00%					71.05%	0.00%	28.95%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	57	19	0	12	50	0	0	0	0	0	0	15	0	8	0	161
PEAK HR FACTOR :	0.000	0.648	0.679	0.000	0.600	0.893	0.000	0.000	0.000	0.000	0.000	0.000	0.536	0.000	0.667	0.000	0.774
	0.655				0.816								0.575				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	9	2	0	1	7	0	0	0	0	0	0	5	0	2	0	26
4:15 PM	0	16	5	0	0	16	0	0	0	0	0	0	5	0	1	0	43
4:30 PM	0	22	3	0	0	12	0	0	0	0	0	0	5	0	2	0	44
4:45 PM	0	15	1	0	0	10	0	0	0	0	0	0	1	0	0	0	27
5:00 PM	0	2	4	0	0	12	0	0	0	0	0	0	1	0	1	0	20
5:15 PM	0	11	2	0	0	7	0	0	0	0	0	0	2	0	2	0	24
5:30 PM	0	13	4	0	2	9	0	0	0	0	0	0	1	0	0	0	29
5:45 PM	0	6	1	0	1	9	0	0	0	0	0	0	3	0	1	0	21
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	94	22	0	4	82	0	0	0	0	0	0	23	0	9	0	234
APPROACH %'s :	0.00%	81.03%	18.97%	0.00%	4.65%	95.35%	0.00%	0.00%					71.88%	0.00%	28.13%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	62	11	0	1	45	0	0	0	0	0	0	16	0	5	0	140
PEAK HR FACTOR :	0.000	0.705	0.550	0.000	0.250	0.703	0.000	0.000	0.000	0.000	0.000	0.000	0.800	0.000	0.625	0.000	0.795
	0.730				0.719								0.750				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rd 264 & Deer Creek Dr
City: Porterville
Control: 2-Way Stop(EB/WB)

Project ID: 19-02019-004
Date: 3/28/2019

Total

NS/EW Streets:	Rd 264				Rd 264				Deer Creek Dr				Deer Creek Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	2	3	0	4	0	0	0	0	0	0	0	1	0	5	0	15
7:15 AM	1	0	4	0	9	0	0	0	0	0	0	0	3	0	2	0	19
7:30 AM	1	0	10	0	7	1	0	0	0	0	0	0	6	0	3	0	28
7:45 AM	0	2	10	0	8	1	0	0	0	0	1	0	2	0	5	0	29
8:00 AM	0	1	5	0	19	0	0	0	0	0	0	0	8	0	0	0	33
8:15 AM	0	0	9	0	11	1	0	0	1	0	0	0	3	0	2	0	27
8:30 AM	0	0	6	0	6	1	2	0	0	0	0	0	5	0	0	0	20
8:45 AM	0	1	2	0	5	2	9	0	0	1	0	0	2	0	4	0	26
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	2	6	49	0	69	6	11	0	1	1	1	0	30	0	21	0	197
APPROACH %'s :	3.51%	10.53%	85.96%	0.00%	80.23%	6.98%	12.79%	0.00%	33.33%	33.33%	33.33%	0.00%	58.82%	0.00%	41.18%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	3	34	0	45	3	0	0	1	0	1	0	19	0	10	0	117
PEAK HR FACTOR :	0.250	0.375	0.850	0.000	0.592	0.750	0.000	0.000	0.250	0.000	0.250	0.000	0.594	0.000	0.500	0.000	0.886
	0.792				0.632				0.500				0.806				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	3	0	0	1	2	0	0	8	0	0	0	5	0	9	0	28
4:15 PM	0	1	3	0	3	2	0	0	2	0	0	0	5	0	7	0	23
4:30 PM	0	2	2	0	4	1	1	0	0	0	0	0	5	0	1	0	16
4:45 PM	0	0	0	0	3	0	0	0	0	0	0	0	1	0	5	0	9
5:00 PM	0	1	4	0	1	1	0	0	0	0	0	0	1	0	6	0	14
5:15 PM	0	1	1	0	3	1	0	0	0	0	0	0	3	0	2	0	11
5:30 PM	0	1	5	0	3	0	0	0	0	0	0	0	1	0	2	0	12
5:45 PM	0	1	1	0	2	1	0	0	0	0	0	0	3	0	2	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	10	16	0	20	8	1	0	10	0	0	0	24	0	34	0	123
APPROACH %'s :	0.00%	38.46%	61.54%	0.00%	68.97%	27.59%	3.45%	0.00%	100.00%	0.00%	0.00%	0.00%	41.38%	0.00%	58.62%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	6	5	0	11	5	1	0	10	0	0	0	16	0	22	0	76
PEAK HR FACTOR :	0.000	0.500	0.417	0.000	0.688	0.625	0.250	0.000	0.313	0.000	0.000	0.000	0.800	0.000	0.611	0.000	0.679
	0.688				0.708				0.313				0.679				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rd 272 & Deer Creek Dr
City: Porterville
Control: No Control

Project ID: 19-02019-005
Date: 3/28/2019

Total

NS/EW Streets:	Rd 272				Rd 272				Deer Creek Dr				Deer Creek Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	0	0	0	0	0	0	0	5	0	0	0	3	0	0	9
7:15 AM	0	0	0	0	0	0	0	0	4	8	0	0	0	2	0	0	14
7:30 AM	3	0	0	0	0	0	0	0	7	9	1	0	0	5	0	0	25
7:45 AM	0	0	0	0	0	0	1	0	10	10	1	0	0	7	0	0	29
8:00 AM	0	0	1	0	0	0	0	0	10	9	2	0	1	7	0	0	30
8:15 AM	0	0	0	0	0	0	0	0	13	12	0	0	1	4	0	0	30
8:30 AM	1	0	0	0	0	0	0	0	5	9	2	0	0	3	0	0	20
8:45 AM	0	0	0	0	0	0	0	0	4	7	0	0	0	6	0	0	17
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	5	0	1	0	0	0	1	0	53	69	6	0	2	37	0	0	174
APPROACH %'s :	83.33%	0.00%	16.67%	0.00%	0.00%	0.00%	100.00%	0.00%	41.41%	53.91%	4.69%	0.00%	5.13%	94.87%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	3	0	1	0	0	0	1	0	40	40	4	0	2	23	0	0	114
PEAK HR FACTOR :	0.250	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.769	0.833	0.500	0.000	0.500	0.821	0.000	0.000	0.950
	0.333				0.250				0.840				0.781				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	1	11	0	0	14
4:15 PM	1	0	1	0	0	0	2	0	0	3	1	0	0	9	0	0	17
4:30 PM	1	0	0	0	0	0	0	0	1	6	0	0	0	3	0	0	11
4:45 PM	2	0	0	0	0	0	0	0	1	3	0	0	0	3	0	0	9
5:00 PM	0	0	0	0	0	0	0	0	0	3	2	0	0	7	0	0	12
5:15 PM	2	0	0	0	0	0	0	0	0	3	2	0	0	3	0	0	10
5:30 PM	1	0	0	0	0	0	0	0	0	4	2	0	0	1	0	0	8
5:45 PM	0	0	0	0	0	0	1	0	1	2	0	0	0	4	0	0	8
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	7	0	1	0	0	0	4	0	3	25	7	0	1	41	0	0	89
APPROACH %'s :	87.50%	0.00%	12.50%	0.00%	0.00%	0.00%	100.00%	0.00%	8.57%	71.43%	20.00%	0.00%	2.38%	97.62%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	4	0	1	0	0	0	3	0	2	13	1	0	1	26	0	0	51
PEAK HR FACTOR :	0.500	0.000	0.250	0.000	0.000	0.000	0.375	0.000	0.500	0.542	0.250	0.000	0.250	0.591	0.000	0.000	0.750
	0.625				0.375				0.571				0.563				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Project Access & Deer Creek D
City: Porterville
Control: No Control

Project ID: 19-02019-006
Date: 3/28/2019

Total

NS/EW Streets:	Project Access				Project Access				Deer Creek Dr				Deer Creek Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	1	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	4
7:15 AM	2	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0	7
7:30 AM	2	0	0	0	0	0	0	0	0	2	3	0	0	3	0	0	10
7:45 AM	6	0	0	0	0	0	0	0	0	1	3	0	0	1	0	0	11
8:00 AM	1	0	0	0	0	0	0	0	0	2	4	0	0	3	0	0	10
8:15 AM	2	0	0	0	0	0	0	0	0	1	3	0	0	1	0	0	7
8:30 AM	3	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	6
8:45 AM	3	0	0	0	0	0	0	0	0	2	3	0	0	2	0	0	10
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	20	0	0	0	0	0	0	0	0	10	25	0	0	10	0	0	65
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%					0.00%	28.57%	71.43%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	11	0	0	0	0	0	0	0	0	6	14	0	0	7	0	0	38
PEAK HR FACTOR :	0.458	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.875	0.000	0.000	0.583	0.000	0.000	0.864
	0.458								0.833				0.583				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	3	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	7
4:15 PM	1	0	0	0	0	0	0	0	0	3	0	0	0	5	0	0	9
4:30 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	6
4:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	0	0	0	0	0	0	0	0	14	0	0	0	18	0	0	36
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	4	0	0	0	0	0	0	0	0	8	0	0	0	13	0	0	25
PEAK HR FACTOR :	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.000	0.000	0.000	0.650	0.000	0.000	0.694
	0.333								0.667				0.650				

APPENDIX C

SYNCHRO 10 (HCM 6th Edition) Worksheets

EXISTING WORKSHEETS

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/04/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	43	14	40	35	181	8	376	35	169	425	28
Future Volume (veh/h)	21	43	14	40	35	181	8	376	35	169	425	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	26	53	17	47	41	213	11	515	48	184	462	30
Peak Hour Factor	0.81	0.81	0.81	0.85	0.85	0.85	0.73	0.73	0.73	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	73	295	95	96	59	305	51	1191	509	233	1480	96
Arrive On Green	0.04	0.22	0.21	0.05	0.23	0.22	0.03	0.36	0.35	0.14	0.47	0.46
Sat Flow, veh/h	1767	1341	430	1767	257	1336	1640	3272	1439	1640	3117	202
Grp Volume(v), veh/h	26	0	70	47	0	254	11	515	48	184	242	250
Grp Sat Flow(s),veh/h/ln	1767	0	1771	1767	0	1593	1640	1636	1439	1640	1636	1683
Q Serve(g_s), s	1.4	0.0	3.2	2.5	0.0	14.4	0.6	11.6	2.2	10.6	8.9	9.0
Cycle Q Clear(g_c), s	1.4	0.0	3.2	2.5	0.0	14.4	0.6	11.6	2.2	10.6	8.9	9.0
Prop In Lane	1.00		0.24	1.00		0.84	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	73	0	390	96	0	363	51	1191	509	233	777	799
V/C Ratio(X)	0.36	0.00	0.18	0.49	0.00	0.70	0.21	0.43	0.09	0.79	0.31	0.31
Avail Cap(c_a), veh/h	126	0	633	144	0	586	151	1191	509	393	777	799
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	0.0	31.1	45.0	0.0	35.1	46.3	23.5	21.2	40.6	15.9	15.9
Incr Delay (d2), s/veh	2.9	0.0	0.2	3.8	0.0	2.4	2.0	1.1	0.4	5.9	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	1.3	1.1	0.0	5.4	0.3	4.3	0.7	4.4	3.1	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	0.0	31.3	48.8	0.0	37.6	48.3	24.7	21.5	46.5	16.9	16.9
LnGrp LOS	D	A	C	D	A	D	D	C	C	D	B	B
Approach Vol, veh/h		96			301			574			676	
Approach Delay, s/veh		36.0			39.3			24.9			25.0	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.4	41.1	10.3	27.1	8.6	52.0	9.5	27.8
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	22.5	31.0	7.0	34.0	8.0	45.5	6.0	* 35
Max Q Clear Time (g_c+I1), s	12.6	13.6	4.5	5.2	2.6	11.0	3.4	16.4
Green Ext Time (p_c), s	0.4	2.2	0.0	0.2	0.0	1.8	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	28.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	71	80	77	5	30	13	68	83	8	66	59	82
Future Vol, veh/h	71	80	77	5	30	13	68	83	8	66	59	82
Peak Hour Factor	0.68	0.68	0.68	0.67	0.67	0.67	0.70	0.70	0.70	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	104	118	113	7	45	19	97	119	11	77	69	95
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13	9.4	11.5	11.2
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	31%	10%	32%
Vol Thru, %	52%	35%	62%	29%
Vol Right, %	5%	34%	27%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	159	228	48	207
LT Vol	68	71	5	66
Through Vol	83	80	30	59
RT Vol	8	77	13	82
Lane Flow Rate	227	335	72	241
Geometry Grp	1	1	1	1
Degree of Util (X)	0.347	0.484	0.112	0.352
Departure Headway (Hd)	5.503	5.201	5.652	5.266
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	652	694	633	684
Service Time	3.542	3.236	3.701	3.303
HCM Lane V/C Ratio	0.348	0.483	0.114	0.352
HCM Control Delay	11.5	13	9.4	11.2
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	1.5	2.7	0.4	1.6

Intersection	
Int Delay, s/veh	4.2

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	19	41	43	50	57	22
Future Vol, veh/h	19	41	43	50	57	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	58	82	82	66	66
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	33	71	52	61	86	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	268	103	119	0	-	0
Stage 1	103	-	-	-	-	-
Stage 2	165	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	719	949	1463	-	-	-
Stage 1	919	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	692	949	1463	-	-	-
Mov Cap-2 Maneuver	692	-	-	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	862	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	9.8	3.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1463	-	849
HCM Lane V/C Ratio	-	-	0.036	-	0.122
HCM Control Delay (s)	-	-	7.6	0	9.8
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	-	0.4

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	1	56	0	10	1	3	68	45	3	0
Future Vol, veh/h	1	0	1	56	0	10	1	3	68	45	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	81	81	81	79	79	79	63	63	63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	0	2	69	0	12	1	4	86	71	5	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	202	239	5	197	196	47	5	0	0	90	0	0
Stage 1	147	147	-	49	49	-	-	-	-	-	-	-
Stage 2	55	92	-	148	147	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	754	660	1075	760	698	1019	1610	-	-	1499	-	-
Stage 1	853	774	-	962	852	-	-	-	-	-	-	-
Stage 2	955	817	-	852	774	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	718	628	1075	731	664	1019	1610	-	-	1499	-	-
Mov Cap-2 Maneuver	718	628	-	731	664	-	-	-	-	-	-	-
Stage 1	852	738	-	961	851	-	-	-	-	-	-	-
Stage 2	942	816	-	810	738	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	10.3	0.1	7.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1610	-	-	861	764	1499	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.107	0.048	-	-
HCM Control Delay (s)	7.2	0	-	9.2	10.3	7.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	74	4	2	60	0	3	0	1	0	0	1
Future Vol, veh/h	40	74	4	2	60	0	3	0	1	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	78	78	78	33	33	33	25	25	25
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	48	88	5	3	77	0	9	0	3	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	93	0	0	272	270	91	271	272	77
Stage 1	-	-	-	-	-	-	187	187	-	83	83	-
Stage 2	-	-	-	-	-	-	85	83	-	188	189	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1515	-	-	1495	-	-	678	635	964	679	633	981
Stage 1	-	-	-	-	-	-	812	743	-	923	824	-
Stage 2	-	-	-	-	-	-	920	824	-	811	742	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1515	-	-	1495	-	-	657	613	964	659	611	981
Mov Cap-2 Maneuver	-	-	-	-	-	-	657	613	-	659	611	-
Stage 1	-	-	-	-	-	-	785	718	-	893	822	-
Stage 2	-	-	-	-	-	-	914	822	-	782	718	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.2	10.1	8.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	714	1515	-	-	1495	-	-	981
HCM Lane V/C Ratio	0.017	0.031	-	-	0.002	-	-	0.004
HCM Control Delay (s)	10.1	7.5	0	-	7.4	0	-	8.7
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5.3

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	48	0	6	48	0	7
Future Vol, veh/h	48	0	6	48	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	46	46	83	83	58	58
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	104	0	7	58	0	12

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	48	36	0	0	65	0
Stage 1	36	-	-	-	-	-
Stage 2	12	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	959	1034	-	-	1531	-
Stage 1	984	-	-	-	-	-
Stage 2	1008	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	959	1034	-	-	1531	-
Mov Cap-2 Maneuver	959	-	-	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	1008	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	959	1531	-	-	-
HCM Lane V/C Ratio	0.109	-	-	-	-
HCM Control Delay (s)	9.2	0	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.4	0	-	-	-

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/04/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	56	26	34	40	163	9	492	52	125	345	16
Future Volume (veh/h)	37	56	26	34	40	163	9	492	52	125	345	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	54	81	38	44	52	212	11	600	63	140	388	18
Peak Hour Factor	0.69	0.69	0.69	0.77	0.77	0.77	0.82	0.82	0.82	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	101	287	134	93	73	298	51	1226	525	186	1454	67
Arrive On Green	0.06	0.24	0.23	0.05	0.23	0.22	0.03	0.37	0.36	0.11	0.46	0.45
Sat Flow, veh/h	1767	1189	558	1767	316	1287	1640	3272	1439	1640	3183	147
Grp Volume(v), veh/h	54	0	119	44	0	264	11	600	63	140	199	207
Grp Sat Flow(s),veh/h/ln	1767	0	1746	1767	0	1603	1640	1636	1439	1640	1636	1694
Q Serve(g_s), s	2.9	0.0	5.5	2.4	0.0	15.0	0.6	13.8	2.9	8.2	7.4	7.5
Cycle Q Clear(g_c), s	2.9	0.0	5.5	2.4	0.0	15.0	0.6	13.8	2.9	8.2	7.4	7.5
Prop In Lane	1.00		0.32	1.00		0.80	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	101	0	421	93	0	371	51	1226	525	186	747	774
V/C Ratio(X)	0.53	0.00	0.28	0.47	0.00	0.71	0.21	0.49	0.12	0.75	0.27	0.27
Avail Cap(c_a), veh/h	161	0	665	126	0	578	150	1226	525	325	747	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	0.0	30.6	45.3	0.0	35.2	46.5	23.6	20.8	42.3	16.6	16.6
Incr Delay (d2), s/veh	4.3	0.0	0.4	3.7	0.0	2.5	2.1	1.4	0.5	6.0	0.9	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	2.2	1.1	0.0	5.7	0.3	5.1	0.9	3.4	2.6	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.5	0.0	31.0	49.0	0.0	37.7	48.6	25.0	21.3	48.4	17.4	17.4
LnGrp LOS	D	A	C	D	A	D	D	C	C	D	B	B
Approach Vol, veh/h		173			308			674			546	
Approach Delay, s/veh		36.7			39.4			25.0			25.4	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.7	42.4	10.2	29.2	8.6	50.5	11.1	28.3
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	18.5	33.5	6.0	36.5	8.0	44.0	8.0	* 35
Max Q Clear Time (g_c+I1), s	10.2	15.8	4.4	7.5	2.6	9.5	4.9	17.0
Green Ext Time (p_c), s	0.2	2.6	0.0	0.4	0.0	1.4	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	28.9
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	92	28	87	3	55	33	83	91	1	11	61	53
Future Vol, veh/h	92	28	87	3	55	33	83	91	1	11	61	53
Peak Hour Factor	0.85	0.85	0.85	0.57	0.57	0.57	0.90	0.90	0.90	0.87	0.87	0.87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	108	33	102	5	96	58	92	101	1	13	70	61
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.3	9.4	10.3	9.3
HCM LOS	B	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	47%	44%	3%	9%
Vol Thru, %	52%	14%	60%	49%
Vol Right, %	1%	42%	36%	42%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	175	207	91	125
LT Vol	83	92	3	11
Through Vol	91	28	55	61
RT Vol	1	87	33	53
Lane Flow Rate	194	244	160	144
Geometry Grp	1	1	1	1
Degree of Util (X)	0.281	0.327	0.217	0.198
Departure Headway (Hd)	5.196	4.839	4.903	4.953
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	684	735	723	716
Service Time	3.287	2.925	2.997	3.049
HCM Lane V/C Ratio	0.284	0.332	0.221	0.201
HCM Control Delay	10.3	10.3	9.4	9.3
HCM Lane LOS	B	B	A	A
HCM 95th-tile Q	1.2	1.4	0.8	0.7

Intersection	
Int Delay, s/veh	4.1

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	21	44	44	45	62	16
Future Vol, veh/h	21	44	44	45	62	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	72	72	73	73
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	28	59	61	63	85	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	281	96	107	0	-	0
Stage 1	96	-	-	-	-	-
Stage 2	185	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	707	958	1478	-	-	-
Stage 1	925	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	677	958	1478	-	-	-
Mov Cap-2 Maneuver	677	-	-	-	-	-
Stage 1	885	-	-	-	-	-
Stage 2	844	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	9.7	3.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1478	-	845
HCM Lane V/C Ratio	-	-	0.041	-	0.103
HCM Control Delay (s)	-	-	7.5	0	9.7
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	-	0.3

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	0	60	0	22	0	6	53	11	5	1
Future Vol, veh/h	10	0	0	60	0	22	0	6	53	11	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	31	31	31	68	68	68	69	69	69	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	32	0	0	88	0	32	0	9	77	15	7	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	102	124	8	86	86	48	8	0	0	86	0	0
Stage 1	38	38	-	48	48	-	-	-	-	-	-	-
Stage 2	64	86	-	38	38	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	876	765	1071	898	802	1018	1606	-	-	1504	-	-
Stage 1	975	861	-	963	853	-	-	-	-	-	-	-
Stage 2	944	822	-	975	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	842	757	1071	891	794	1018	1606	-	-	1504	-	-
Mov Cap-2 Maneuver	842	757	-	891	794	-	-	-	-	-	-	-
Stage 1	975	852	-	963	853	-	-	-	-	-	-	-
Stage 2	914	822	-	965	852	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	9.5	0	4.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1606	-	-	842	922	1504	-	-
HCM Lane V/C Ratio	-	-	-	0.038	0.131	0.01	-	-
HCM Control Delay (s)	0	-	-	9.4	9.5	7.4	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	61	1	1	70	0	4	0	1	0	0	3
Future Vol, veh/h	2	61	1	1	70	0	4	0	1	0	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	56	56	56	63	63	63	38	38	38
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	107	2	2	125	0	6	0	2	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	125	0	0	109	0	0	249	245	108	246	246	125
Stage 1	-	-	-	-	-	-	116	116	-	129	129	-
Stage 2	-	-	-	-	-	-	133	129	-	117	117	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1455	-	-	1475	-	-	702	655	943	706	655	923
Stage 1	-	-	-	-	-	-	886	798	-	872	787	-
Stage 2	-	-	-	-	-	-	868	787	-	885	797	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1455	-	-	1475	-	-	694	652	943	702	652	923
Mov Cap-2 Maneuver	-	-	-	-	-	-	694	652	-	702	652	-
Stage 1	-	-	-	-	-	-	883	796	-	869	786	-
Stage 2	-	-	-	-	-	-	860	786	-	881	795	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	10	8.9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	733	1455	-	-	1475	-	-	923
HCM Lane V/C Ratio	0.011	0.002	-	-	0.001	-	-	0.009
HCM Control Delay (s)	10	7.5	0	-	7.4	0	-	8.9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5.6

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	48	0	8	48	0	13
Future Vol, veh/h	48	0	8	48	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	33	67	67	65	65
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	145	0	12	72	0	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	68	48	0	0	84	0
Stage 1	48	-	-	-	-	-
Stage 2	20	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	934	1018	-	-	1506	-
Stage 1	972	-	-	-	-	-
Stage 2	1000	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	934	1018	-	-	1506	-
Mov Cap-2 Maneuver	934	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	1000	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	9.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	934	1506	-	-	-
HCM Lane V/C Ratio	0.156	-	-	-	-
HCM Control Delay (s)	9.6	0	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.6	0	-	-	-

EXISTING PLUS PROJECT WORKSHEETS

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	43	14	46	35	201	8	376	41	189	425	28
Future Volume (veh/h)	21	43	14	46	35	201	8	376	41	189	425	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	26	53	17	54	41	236	11	515	56	205	462	30
Peak Hour Factor	0.81	0.81	0.81	0.85	0.85	0.85	0.73	0.73	0.73	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	72	305	98	100	56	323	51	1128	481	254	1459	94
Arrive On Green	0.04	0.23	0.22	0.06	0.24	0.23	0.03	0.34	0.33	0.15	0.47	0.46
Sat Flow, veh/h	1767	1341	430	1767	235	1355	1640	3272	1438	1640	3117	202
Grp Volume(v), veh/h	26	0	70	54	0	277	11	515	56	205	242	250
Grp Sat Flow(s),veh/h/ln	1767	0	1771	1767	0	1590	1640	1636	1438	1640	1636	1683
Q Serve(g_s), s	1.4	0.0	3.2	3.0	0.0	16.0	0.6	12.2	2.7	12.0	9.2	9.2
Cycle Q Clear(g_c), s	1.4	0.0	3.2	3.0	0.0	16.0	0.6	12.2	2.7	12.0	9.2	9.2
Prop In Lane	1.00		0.24	1.00		0.85	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	72	0	403	100	0	379	51	1128	481	254	766	788
V/C Ratio(X)	0.36	0.00	0.17	0.54	0.00	0.73	0.22	0.46	0.12	0.81	0.32	0.32
Avail Cap(c_a), veh/h	125	0	624	142	0	576	149	1128	481	388	766	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.4	0.0	31.0	45.6	0.0	35.3	46.9	25.3	22.9	40.6	16.5	16.5
Incr Delay (d2), s/veh	3.0	0.0	0.2	4.4	0.0	2.7	2.1	1.3	0.5	7.2	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	1.3	1.3	0.0	6.1	0.3	4.5	0.9	5.0	3.3	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.3	0.0	31.2	50.0	0.0	38.0	49.0	26.6	23.4	47.8	17.6	17.6
LnGrp LOS	D	A	C	D	A	D	D	C	C	D	B	B
Approach Vol, veh/h		96			331			582			697	
Approach Delay, s/veh		36.1			40.0			26.8			26.5	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.9	39.7	10.6	28.1	8.6	52.0	9.6	29.2
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	22.5	31.0	7.0	34.0	8.0	45.5	6.0	* 35
Max Q Clear Time (g_c+I1), s	14.0	14.2	5.0	5.2	2.6	11.2	3.4	18.0
Green Ext Time (p_c), s	0.4	2.2	0.0	0.2	0.0	1.8	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	29.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	71	80	102	5	30	13	93	83	8	66	59	82
Future Vol, veh/h	71	80	102	5	30	13	93	83	8	66	59	82
Peak Hour Factor	0.68	0.68	0.68	0.67	0.67	0.67	0.70	0.70	0.70	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	104	118	150	7	45	19	133	119	11	77	69	95
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.6	9.7	12.7	11.7
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	51%	28%	10%	32%
Vol Thru, %	45%	32%	62%	29%
Vol Right, %	4%	40%	27%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	184	253	48	207
LT Vol	93	71	5	66
Through Vol	83	80	30	59
RT Vol	8	102	13	82
Lane Flow Rate	263	372	72	241
Geometry Grp	1	1	1	1
Degree of Util (X)	0.414	0.547	0.117	0.366
Departure Headway (Hd)	5.666	5.294	5.882	5.469
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	633	681	606	655
Service Time	3.719	3.342	3.953	3.522
HCM Lane V/C Ratio	0.415	0.546	0.119	0.368
HCM Control Delay	12.7	14.6	9.7	11.7
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	2	3.3	0.4	1.7

Intersection	
Int Delay, s/veh	5.2

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	22	66	68	50	57	25
Future Vol, veh/h	22	66	68	50	57	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	58	82	82	66	66
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	38	114	83	61	86	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	332	105	124	0	-	0
Stage 1	105	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	661	947	1457	-	-	-
Stage 1	917	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	622	947	1457	-	-	-
Mov Cap-2 Maneuver	622	-	-	-	-	-
Stage 1	863	-	-	-	-	-
Stage 2	808	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	10.2	4.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1457	-	838
HCM Lane V/C Ratio	-	-	0.057	-	0.181
HCM Control Delay (s)	-	-	7.6	0	10.2
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0.2	-	0.7

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	1	84	0	10	1	3	96	45	3	0
Future Vol, veh/h	1	0	1	84	0	10	1	3	96	45	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	81	81	81	79	79	79	63	63	63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	0	2	104	0	12	1	4	122	71	5	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	220	275	5	215	214	65	5	0	0	126	0	0
Stage 1	147	147	-	67	67	-	-	-	-	-	-	-
Stage 2	73	128	-	148	147	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	734	631	1075	739	682	996	1610	-	-	1454	-	-
Stage 1	853	774	-	941	837	-	-	-	-	-	-	-
Stage 2	934	788	-	852	774	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	697	599	1075	709	648	996	1610	-	-	1454	-	-
Mov Cap-2 Maneuver	697	599	-	709	648	-	-	-	-	-	-	-
Stage 1	852	736	-	940	836	-	-	-	-	-	-	-
Stage 2	922	787	-	809	736	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	10.9	0.1	7.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1610	-	-	846	731	1454	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.159	0.049	-	-
HCM Control Delay (s)	7.2	0	-	9.3	10.9	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.6	0.2	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	102	4	2	88	0	3	0	1	0	0	1
Future Vol, veh/h	40	102	4	2	88	0	3	0	1	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	78	78	78	33	33	33	25	25	25
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	48	121	5	3	113	0	9	0	3	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	113	0	0	126	0	0	341	339	124	340	341	113
Stage 1	-	-	-	-	-	-	220	220	-	119	119	-
Stage 2	-	-	-	-	-	-	121	119	-	221	222	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1470	-	-	1454	-	-	611	581	924	612	579	937
Stage 1	-	-	-	-	-	-	780	719	-	883	795	-
Stage 2	-	-	-	-	-	-	881	795	-	779	718	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1470	-	-	1454	-	-	591	560	924	593	558	937
Mov Cap-2 Maneuver	-	-	-	-	-	-	591	560	-	593	558	-
Stage 1	-	-	-	-	-	-	753	694	-	852	793	-
Stage 2	-	-	-	-	-	-	875	793	-	749	693	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0.2	10.6	8.9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	650	1470	-	-	1454	-	-	937
HCM Lane V/C Ratio	0.019	0.032	-	-	0.002	-	-	0.004
HCM Control Delay (s)	10.6	7.5	0	-	7.5	0	-	8.9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5.8

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	76	0	6	76	0	7
Future Vol, veh/h	76	0	6	76	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	46	46	83	83	58	58
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	165	0	7	92	0	12

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	65	53	0	0	99	0
Stage 1	53	-	-	-	-	-
Stage 2	12	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	938	1012	-	-	1488	-
Stage 1	967	-	-	-	-	-
Stage 2	1008	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	938	1012	-	-	1488	-
Mov Cap-2 Maneuver	938	-	-	-	-	-
Stage 1	967	-	-	-	-	-
Stage 2	1008	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	938	1488	-	-	-
HCM Lane V/C Ratio	0.176	-	-	-	-
HCM Control Delay (s)	9.7	0	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.6	0	-	-	-

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	56	26	40	40	183	9	492	58	145	345	16
Future Volume (veh/h)	37	56	26	40	40	183	9	492	58	145	345	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	54	81	38	52	52	238	11	600	71	163	388	18
Peak Hour Factor	0.69	0.69	0.69	0.77	0.77	0.77	0.82	0.82	0.82	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	100	296	139	99	70	319	51	1155	493	209	1431	66
Arrive On Green	0.06	0.25	0.24	0.06	0.24	0.23	0.03	0.35	0.34	0.13	0.45	0.44
Sat Flow, veh/h	1767	1189	558	1767	287	1312	1640	3272	1438	1640	3182	147
Grp Volume(v), veh/h	54	0	119	52	0	290	11	600	71	163	199	207
Grp Sat Flow(s),veh/h/ln	1767	0	1747	1767	0	1599	1640	1636	1438	1640	1636	1694
Q Serve(g_s), s	3.0	0.0	5.5	2.9	0.0	16.8	0.7	14.5	3.4	9.6	7.6	7.7
Cycle Q Clear(g_c), s	3.0	0.0	5.5	2.9	0.0	16.8	0.7	14.5	3.4	9.6	7.6	7.7
Prop In Lane	1.00		0.32	1.00		0.82	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	100	0	435	99	0	389	51	1155	493	209	736	761
V/C Ratio(X)	0.54	0.00	0.27	0.53	0.00	0.75	0.22	0.52	0.14	0.78	0.27	0.27
Avail Cap(c_a), veh/h	159	0	654	124	0	567	147	1155	493	320	736	761
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.9	0.0	30.4	46.0	0.0	35.4	47.3	25.7	22.7	42.3	17.3	17.3
Incr Delay (d2), s/veh	4.5	0.0	0.3	4.3	0.0	3.1	2.1	1.7	0.6	6.6	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	2.2	1.3	0.0	6.4	0.3	5.4	1.1	4.1	2.7	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.4	0.0	30.8	50.3	0.0	38.5	49.4	27.3	23.3	48.9	18.2	18.2
LnGrp LOS	D	A	C	D	A	D	D	C	C	D	B	B
Approach Vol, veh/h		173			342			682			569	
Approach Delay, s/veh		36.9			40.3			27.3			27.0	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.3	40.8	10.6	30.4	8.6	50.5	11.2	29.8
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	18.5	33.5	6.0	36.5	8.0	44.0	8.0	* 35
Max Q Clear Time (g_c+I1), s	11.6	16.5	4.9	7.5	2.7	9.7	5.0	18.8
Green Ext Time (p_c), s	0.3	2.6	0.0	0.4	0.0	1.4	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	30.6
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	92	28	112	3	55	33	108	91	1	11	61	53
Future Vol, veh/h	92	28	112	3	55	33	108	91	1	11	61	53
Peak Hour Factor	0.85	0.85	0.85	0.57	0.57	0.57	0.90	0.90	0.90	0.87	0.87	0.87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	108	33	132	5	96	58	120	101	1	13	70	61
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11	9.7	11.1	9.6
HCM LOS	B	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	40%	3%	9%
Vol Thru, %	45%	12%	60%	49%
Vol Right, %	1%	48%	36%	42%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	200	232	91	125
LT Vol	108	92	3	11
Through Vol	91	28	55	61
RT Vol	1	112	33	53
Lane Flow Rate	222	273	160	144
Geometry Grp	1	1	1	1
Degree of Util (X)	0.333	0.38	0.228	0.207
Departure Headway (Hd)	5.401	5.008	5.146	5.199
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	667	723	698	690
Service Time	3.434	3.008	3.18	3.237
HCM Lane V/C Ratio	0.333	0.378	0.229	0.209
HCM Control Delay	11.1	11	9.7	9.6
HCM Lane LOS	B	B	A	A
HCM 95th-tile Q	1.5	1.8	0.9	0.8

Intersection	
Int Delay, s/veh	5

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	24	69	69	45	62	19
Future Vol, veh/h	24	69	69	45	62	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	72	72	73	73
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	92	96	63	85	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	353	98	111	0	-	0
Stage 1	98	-	-	-	-	-
Stage 2	255	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	643	955	1473	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	599	955	1473	-	-	-
Mov Cap-2 Maneuver	599	-	-	-	-	-
Stage 1	860	-	-	-	-	-
Stage 2	785	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	10.1	4.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1473	-	828
HCM Lane V/C Ratio	-	-	0.065	-	0.15
HCM Control Delay (s)	-	-	7.6	0	10.1
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0.2	-	0.5

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	0	88	0	22	0	6	81	11	5	1
Future Vol, veh/h	10	0	0	88	0	22	0	6	81	11	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	31	31	31	68	68	68	69	69	69	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	32	0	0	129	0	32	0	9	117	15	7	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	122	164	8	106	106	68	8	0	0	126	0	0
Stage 1	38	38	-	68	68	-	-	-	-	-	-	-
Stage 2	84	126	-	38	38	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	850	727	1071	871	782	992	1606	-	-	1454	-	-
Stage 1	975	861	-	940	836	-	-	-	-	-	-	-
Stage 2	922	790	-	975	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	816	720	1071	864	774	992	1606	-	-	1454	-	-
Mov Cap-2 Maneuver	816	720	-	864	774	-	-	-	-	-	-	-
Stage 1	975	852	-	940	836	-	-	-	-	-	-	-
Stage 2	892	790	-	965	852	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	10	0	4.9
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1606	-	-	816	887	1454	-	-
HCM Lane V/C Ratio	-	-	-	0.04	0.182	0.011	-	-
HCM Control Delay (s)	0	-	-	9.6	10	7.5	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	89	1	1	98	0	4	0	1	0	0	3
Future Vol, veh/h	2	89	1	1	98	0	4	0	1	0	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	56	56	56	63	63	63	38	38	38
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	156	2	2	175	0	6	0	2	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	175	0	0	158	0	0	348	344	157	345	345	175
Stage 1	-	-	-	-	-	-	165	165	-	179	179	-
Stage 2	-	-	-	-	-	-	183	179	-	166	166	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1395	-	-	1416	-	-	605	577	886	607	576	866
Stage 1	-	-	-	-	-	-	835	760	-	820	749	-
Stage 2	-	-	-	-	-	-	816	749	-	834	759	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1395	-	-	1416	-	-	597	574	886	603	573	866
Mov Cap-2 Maneuver	-	-	-	-	-	-	597	574	-	603	573	-
Stage 1	-	-	-	-	-	-	832	758	-	818	748	-
Stage 2	-	-	-	-	-	-	807	748	-	830	757	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	10.7	9.2
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	639	1395	-	-	1416	-	-	866
HCM Lane V/C Ratio	0.012	0.003	-	-	0.001	-	-	0.009
HCM Control Delay (s)	10.7	7.6	0	-	7.5	0	-	9.2
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	6.3

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	76	0	8	76	0	13
Future Vol, veh/h	76	0	8	76	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	33	67	67	65	65
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	230	0	12	113	0	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	89	69	0	0	125	0
Stage 1	69	-	-	-	-	-
Stage 2	20	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	909	991	-	-	1455	-
Stage 1	951	-	-	-	-	-
Stage 2	1000	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	909	991	-	-	1455	-
Mov Cap-2 Maneuver	909	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	1000	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	909	1455	-	-	-
HCM Lane V/C Ratio	0.253	-	-	-	-
HCM Control Delay (s)	10.3	0	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	1	0	-	-	-

NEAR-TERM
WORKSHEETS

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	44	14	41	36	186	8	385	36	173	436	29
Future Volume (veh/h)	22	44	14	41	36	186	8	385	36	173	436	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	27	54	17	48	42	219	11	527	49	188	474	32
Peak Hour Factor	0.81	0.81	0.81	0.85	0.85	0.85	0.73	0.73	0.73	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	74	301	95	97	59	309	51	1175	502	237	1468	99
Arrive On Green	0.04	0.22	0.21	0.05	0.23	0.22	0.03	0.36	0.35	0.14	0.47	0.46
Sat Flow, veh/h	1767	1348	424	1767	256	1337	1640	3272	1439	1640	3109	209
Grp Volume(v), veh/h	27	0	71	48	0	261	11	527	49	188	249	257
Grp Sat Flow(s),veh/h/ln	1767	0	1772	1767	0	1593	1640	1636	1439	1640	1636	1682
Q Serve(g_s), s	1.5	0.0	3.2	2.6	0.0	14.9	0.6	12.1	2.3	10.9	9.3	9.4
Cycle Q Clear(g_c), s	1.5	0.0	3.2	2.6	0.0	14.9	0.6	12.1	2.3	10.9	9.3	9.4
Prop In Lane	1.00		0.24	1.00		0.84	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	74	0	396	97	0	368	51	1175	502	237	773	794
V/C Ratio(X)	0.36	0.00	0.18	0.50	0.00	0.71	0.21	0.45	0.10	0.79	0.32	0.32
Avail Cap(c_a), veh/h	126	0	630	144	0	583	150	1175	502	391	773	794
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.9	0.0	31.0	45.2	0.0	35.2	46.5	24.1	21.6	40.7	16.2	16.2
Incr Delay (d2), s/veh	3.0	0.0	0.2	3.9	0.0	2.5	2.1	1.2	0.4	5.9	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	1.3	1.2	0.0	5.6	0.3	4.4	0.8	4.5	3.3	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.9	0.0	31.2	49.1	0.0	37.7	48.6	25.3	22.0	46.6	17.3	17.3
LnGrp LOS	D	A	C	D	A	D	D	C	C	D	B	B
Approach Vol, veh/h		98			309			587			694	
Approach Delay, s/veh		36.1			39.5			25.5			25.2	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.7	40.9	10.4	27.5	8.6	52.0	9.6	28.2
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	22.5	31.0	7.0	34.0	8.0	45.5	6.0	* 35
Max Q Clear Time (g_c+I1), s	12.9	14.1	4.6	5.2	2.6	11.4	3.5	16.9
Green Ext Time (p_c), s	0.4	2.2	0.0	0.2	0.0	1.8	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	28.6
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	72	81	78	5	30	13	69	84	8	67	60	83
Future Vol, veh/h	72	81	78	5	30	13	69	84	8	67	60	83
Peak Hour Factor	0.68	0.68	0.68	0.67	0.67	0.67	0.70	0.70	0.70	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	106	119	115	7	45	19	99	120	11	78	70	97
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.3	9.5	11.6	11.3
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	31%	10%	32%
Vol Thru, %	52%	35%	62%	29%
Vol Right, %	5%	34%	27%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	161	231	48	210
LT Vol	69	72	5	67
Through Vol	84	81	30	60
RT Vol	8	78	13	83
Lane Flow Rate	230	340	72	244
Geometry Grp	1	1	1	1
Degree of Util (X)	0.353	0.493	0.113	0.359
Departure Headway (Hd)	5.529	5.222	5.684	5.29
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	649	690	628	679
Service Time	3.571	3.261	3.739	3.331
HCM Lane V/C Ratio	0.354	0.493	0.115	0.359
HCM Control Delay	11.6	13.3	9.5	11.3
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	1.6	2.7	0.4	1.6

Intersection	
Int Delay, s/veh	4.2

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	19	42	44	51	58	22
Future Vol, veh/h	19	42	44	51	58	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	58	82	82	66	66
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	33	72	54	62	88	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	275	105	121	0	-	0
Stage 1	105	-	-	-	-	-
Stage 2	170	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	712	947	1460	-	-	-
Stage 1	917	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	685	947	1460	-	-	-
Mov Cap-2 Maneuver	685	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	857	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	9.9	3.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1460	-	846
HCM Lane V/C Ratio	-	-	0.037	-	0.124
HCM Control Delay (s)	-	-	7.6	0	9.9
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	-	0.4

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	1	57	0	10	1	3	69	46	3	0
Future Vol, veh/h	1	0	1	57	0	10	1	3	69	46	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	81	81	81	79	79	79	63	63	63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	0	2	70	0	12	1	4	87	73	5	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	207	244	5	202	201	48	5	0	0	91	0	0
Stage 1	151	151	-	50	50	-	-	-	-	-	-	-
Stage 2	56	93	-	152	151	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	748	656	1075	754	693	1018	1610	-	-	1498	-	-
Stage 1	849	770	-	961	851	-	-	-	-	-	-	-
Stage 2	954	816	-	848	770	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	711	623	1075	724	658	1018	1610	-	-	1498	-	-
Mov Cap-2 Maneuver	711	623	-	724	658	-	-	-	-	-	-	-
Stage 1	848	732	-	960	850	-	-	-	-	-	-	-
Stage 2	941	815	-	805	732	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	10.3	0.1	7.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1610	-	-	856	757	1498	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.109	0.049	-	-
HCM Control Delay (s)	7.2	0	-	9.2	10.3	7.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0.2	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	75	4	2	61	0	3	0	1	0	0	1
Future Vol, veh/h	41	75	4	2	61	0	3	0	1	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	78	78	78	33	33	33	25	25	25
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	49	89	5	3	78	0	9	0	3	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	78	0	0	94	0	0	276	274	92	275	276	78
Stage 1	-	-	-	-	-	-	190	190	-	84	84	-
Stage 2	-	-	-	-	-	-	86	84	-	191	192	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1514	-	-	1494	-	-	674	631	963	675	630	980
Stage 1	-	-	-	-	-	-	809	741	-	922	823	-
Stage 2	-	-	-	-	-	-	919	823	-	808	740	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1514	-	-	1494	-	-	653	608	963	655	607	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	653	608	-	655	607	-
Stage 1	-	-	-	-	-	-	781	716	-	891	821	-
Stage 2	-	-	-	-	-	-	913	821	-	778	715	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.2	10.2	8.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	710	1514	-	-	1494	-	-	980
HCM Lane V/C Ratio	0.017	0.032	-	-	0.002	-	-	0.004
HCM Control Delay (s)	10.2	7.5	0	-	7.4	0	-	8.7
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5.3

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	48	0	6	48	0	7
Future Vol, veh/h	48	0	6	48	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	46	46	83	83	58	58
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	104	0	7	58	0	12

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	48	36	0	0	65	0
Stage 1	36	-	-	-	-	-
Stage 2	12	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	959	1034	-	-	1531	-
Stage 1	984	-	-	-	-	-
Stage 2	1008	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	959	1034	-	-	1531	-
Mov Cap-2 Maneuver	959	-	-	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	1008	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	959	1531	-	-	-
HCM Lane V/C Ratio	0.109	-	-	-	-
HCM Control Delay (s)	9.2	0	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.4	0	-	-	-

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	57	27	35	41	167	9	504	53	128	354	16
Future Volume (veh/h)	38	57	27	35	41	167	9	504	53	128	354	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	55	83	39	45	53	217	11	615	65	144	398	18
Peak Hour Factor	0.69	0.69	0.69	0.77	0.77	0.77	0.82	0.82	0.82	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	101	289	136	94	74	302	51	1212	518	190	1450	65
Arrive On Green	0.06	0.24	0.23	0.05	0.23	0.22	0.03	0.37	0.36	0.12	0.45	0.44
Sat Flow, veh/h	1767	1188	558	1767	315	1288	1640	3272	1439	1640	3187	144
Grp Volume(v), veh/h	55	0	122	45	0	270	11	615	65	144	204	212
Grp Sat Flow(s),veh/h/ln	1767	0	1746	1767	0	1603	1640	1636	1439	1640	1636	1694
Q Serve(g_s), s	3.0	0.0	5.6	2.4	0.0	15.4	0.6	14.4	3.0	8.4	7.7	7.7
Cycle Q Clear(g_c), s	3.0	0.0	5.6	2.4	0.0	15.4	0.6	14.4	3.0	8.4	7.7	7.7
Prop In Lane	1.00		0.32	1.00		0.80	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	101	0	425	94	0	375	51	1212	518	190	744	771
V/C Ratio(X)	0.54	0.00	0.29	0.48	0.00	0.72	0.21	0.51	0.13	0.76	0.27	0.28
Avail Cap(c_a), veh/h	161	0	662	125	0	575	149	1212	518	323	744	771
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.4	0.0	30.6	45.5	0.0	35.3	46.7	24.2	21.2	42.4	16.8	16.8
Incr Delay (d2), s/veh	4.4	0.0	0.4	3.7	0.0	2.6	2.1	1.5	0.5	6.1	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	2.3	1.1	0.0	5.9	0.3	5.3	1.0	3.5	2.7	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.8	0.0	30.9	49.2	0.0	37.9	48.8	25.7	21.7	48.5	17.7	17.7
LnGrp LOS	D	A	C	D	A	D	D	C	C	D	B	B
Approach Vol, veh/h		177			315			691			560	
Approach Delay, s/veh		36.8			39.5			25.7			25.6	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	42.1	10.3	29.6	8.6	50.5	11.2	28.7
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	18.5	33.5	6.0	36.5	8.0	44.0	8.0	* 35
Max Q Clear Time (g_c+I1), s	10.4	16.4	4.4	7.6	2.6	9.7	5.0	17.4
Green Ext Time (p_c), s	0.2	2.7	0.0	0.4	0.0	1.4	0.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	29.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	93	28	88	3	56	33	84	92	1	11	62	54
Future Vol, veh/h	93	28	88	3	56	33	84	92	1	11	62	54
Peak Hour Factor	0.85	0.85	0.85	0.57	0.57	0.57	0.90	0.90	0.90	0.87	0.87	0.87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	109	33	104	5	98	58	93	102	1	13	71	62
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.4	9.5	10.5	9.4
HCM LOS	B	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	47%	44%	3%	9%
Vol Thru, %	52%	13%	61%	49%
Vol Right, %	1%	42%	36%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	177	209	92	127
LT Vol	84	93	3	11
Through Vol	92	28	56	62
RT Vol	1	88	33	54
Lane Flow Rate	197	246	161	146
Geometry Grp	1	1	1	1
Degree of Util (X)	0.29	0.332	0.225	0.206
Departure Headway (Hd)	5.313	4.966	5.028	5.07
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	680	728	717	711
Service Time	3.321	2.966	3.039	3.084
HCM Lane V/C Ratio	0.29	0.338	0.225	0.205
HCM Control Delay	10.5	10.4	9.5	9.4
HCM Lane LOS	B	B	A	A
HCM 95th-tile Q	1.2	1.5	0.9	0.8

Intersection	
Int Delay, s/veh	4.1

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	21	45	45	46	63	16
Future Vol, veh/h	21	45	45	46	63	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	72	72	73	73
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	28	60	63	64	86	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	287	97	108	0	-	0
Stage 1	97	-	-	-	-	-
Stage 2	190	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	701	956	1476	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	840	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	670	956	1476	-	-	-
Mov Cap-2 Maneuver	670	-	-	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	840	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	9.8	3.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1476	-	842
HCM Lane V/C Ratio	-	-	0.042	-	0.105
HCM Control Delay (s)	-	-	7.5	0	9.8
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	-	0.3

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	0	61	0	22	0	6	54	11	5	1
Future Vol, veh/h	10	0	0	61	0	22	0	6	54	11	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	31	31	31	68	68	68	69	69	69	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	32	0	0	90	0	32	0	9	78	15	7	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	102	125	8	86	86	48	8	0	0	87	0	0
Stage 1	38	38	-	48	48	-	-	-	-	-	-	-
Stage 2	64	87	-	38	38	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	876	764	1071	898	802	1018	1606	-	-	1503	-	-
Stage 1	975	861	-	963	853	-	-	-	-	-	-	-
Stage 2	944	821	-	975	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	842	756	1071	891	794	1018	1606	-	-	1503	-	-
Mov Cap-2 Maneuver	842	756	-	891	794	-	-	-	-	-	-	-
Stage 1	975	852	-	963	853	-	-	-	-	-	-	-
Stage 2	914	821	-	965	852	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	9.5	0	4.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1606	-	-	842	921	1503	-	-
HCM Lane V/C Ratio	-	-	-	0.038	0.133	0.01	-	-
HCM Control Delay (s)	0	-	-	9.4	9.5	7.4	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	62	1	1	71	0	4	0	1	0	0	3
Future Vol, veh/h	2	62	1	1	71	0	4	0	1	0	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	56	56	56	63	63	63	38	38	38
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	109	2	2	127	0	6	0	2	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	127	0	0	111	0	0	253	249	110	250	250	127
Stage 1	-	-	-	-	-	-	118	118	-	131	131	-
Stage 2	-	-	-	-	-	-	135	131	-	119	119	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1453	-	-	1473	-	-	698	652	941	701	651	921
Stage 1	-	-	-	-	-	-	884	796	-	870	786	-
Stage 2	-	-	-	-	-	-	866	786	-	883	795	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1453	-	-	1473	-	-	690	649	941	697	648	921
Mov Cap-2 Maneuver	-	-	-	-	-	-	690	649	-	697	648	-
Stage 1	-	-	-	-	-	-	881	794	-	867	785	-
Stage 2	-	-	-	-	-	-	858	785	-	879	793	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	10	8.9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	729	1453	-	-	1473	-	-	921
HCM Lane V/C Ratio	0.011	0.002	-	-	0.001	-	-	0.009
HCM Control Delay (s)	10	7.5	0	-	7.4	0	-	8.9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5.6

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	48	0	8	48	0	13
Future Vol, veh/h	48	0	8	48	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	33	67	67	65	65
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	145	0	12	72	0	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	68	48	0	0	84	0
Stage 1	48	-	-	-	-	-
Stage 2	20	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	934	1018	-	-	1506	-
Stage 1	972	-	-	-	-	-
Stage 2	1000	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	934	1018	-	-	1506	-
Mov Cap-2 Maneuver	934	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	1000	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	9.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	934	1506	-	-	-
HCM Lane V/C Ratio	0.156	-	-	-	-
HCM Control Delay (s)	9.6	0	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.6	0	-	-	-

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	44	14	47	36	205	8	385	41	193	436	29
Future Volume (veh/h)	22	44	14	47	36	205	8	385	41	193	436	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	27	54	17	55	42	241	11	527	56	210	474	32
Peak Hour Factor	0.81	0.81	0.81	0.85	0.85	0.85	0.73	0.73	0.73	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	74	311	98	101	57	326	51	1111	474	258	1449	98
Arrive On Green	0.04	0.23	0.22	0.06	0.24	0.23	0.03	0.34	0.33	0.16	0.47	0.46
Sat Flow, veh/h	1767	1348	424	1767	236	1355	1640	3272	1437	1640	3109	209
Grp Volume(v), veh/h	27	0	71	55	0	283	11	527	56	210	249	257
Grp Sat Flow(s),veh/h/ln	1767	0	1772	1767	0	1591	1640	1636	1437	1640	1636	1682
Q Serve(g_s), s	1.5	0.0	3.2	3.0	0.0	16.5	0.7	12.7	2.7	12.3	9.6	9.6
Cycle Q Clear(g_c), s	1.5	0.0	3.2	3.0	0.0	16.5	0.7	12.7	2.7	12.3	9.6	9.6
Prop In Lane	1.00		0.24	1.00		0.85	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	74	0	408	101	0	383	51	1111	474	258	762	784
V/C Ratio(X)	0.37	0.00	0.17	0.55	0.00	0.74	0.22	0.47	0.12	0.81	0.33	0.33
Avail Cap(c_a), veh/h	124	0	622	142	0	574	148	1111	474	386	762	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.5	0.0	30.9	45.8	0.0	35.4	47.2	25.9	23.3	40.6	16.8	16.8
Incr Delay (d2), s/veh	3.0	0.0	0.2	4.5	0.0	2.8	2.1	1.5	0.5	7.9	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	1.3	1.4	0.0	6.2	0.3	4.7	0.9	5.2	3.4	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.5	0.0	31.1	50.3	0.0	38.2	49.2	27.4	23.8	48.5	17.9	18.0
LnGrp LOS	D	A	C	D	A	D	D	C	C	D	B	B
Approach Vol, veh/h		98			338			594			716	
Approach Delay, s/veh		36.2			40.2			27.5			26.9	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.2	39.4	10.7	28.5	8.6	52.0	9.7	29.5
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	22.5	31.0	7.0	34.0	8.0	45.5	6.0	* 35
Max Q Clear Time (g_c+I1), s	14.3	14.7	5.0	5.2	2.7	11.6	3.5	18.5
Green Ext Time (p_c), s	0.4	2.2	0.0	0.2	0.0	1.8	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	72	81	103	5	30	13	94	84	8	67	60	83
Future Vol, veh/h	72	81	103	5	30	13	94	84	8	67	60	83
Peak Hour Factor	0.68	0.68	0.68	0.67	0.67	0.67	0.70	0.70	0.70	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	106	119	151	7	45	19	134	120	11	78	70	97
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.9	9.8	12.8	11.8
HCM LOS	B	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	51%	28%	10%	32%
Vol Thru, %	45%	32%	62%	29%
Vol Right, %	4%	40%	27%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	186	256	48	210
LT Vol	94	72	5	67
Through Vol	84	81	30	60
RT Vol	8	103	13	83
Lane Flow Rate	266	376	72	244
Geometry Grp	1	1	1	1
Degree of Util (X)	0.42	0.556	0.118	0.373
Departure Headway (Hd)	5.691	5.316	5.918	5.492
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	630	678	602	652
Service Time	3.748	3.367	3.992	3.551
HCM Lane V/C Ratio	0.422	0.555	0.12	0.374
HCM Control Delay	12.8	14.9	9.8	11.8
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	2.1	3.4	0.4	1.7

Intersection	
Int Delay, s/veh	5.2

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	22	67	69	51	58	25
Future Vol, veh/h	22	67	69	51	58	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	58	82	82	66	66
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	38	116	84	62	88	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	337	107	126	0	-	0
Stage 1	107	-	-	-	-	-
Stage 2	230	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	656	944	1454	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	806	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	617	944	1454	-	-	-
Mov Cap-2 Maneuver	617	-	-	-	-	-
Stage 1	860	-	-	-	-	-
Stage 2	806	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	10.3	4.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1454	-	835
HCM Lane V/C Ratio	-	-	0.058	-	0.184
HCM Control Delay (s)	-	-	7.6	0	10.3
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0.2	-	0.7

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	1	85	0	10	1	3	97	46	3	0
Future Vol, veh/h	1	0	1	85	0	10	1	3	97	46	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	81	81	81	79	79	79	63	63	63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	0	2	105	0	12	1	4	123	73	5	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	225	280	5	220	219	66	5	0	0	127	0	0
Stage 1	151	151	-	68	68	-	-	-	-	-	-	-
Stage 2	74	129	-	152	151	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	728	627	1075	734	678	995	1610	-	-	1453	-	-
Stage 1	849	770	-	940	836	-	-	-	-	-	-	-
Stage 2	933	787	-	848	770	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	691	595	1075	704	643	995	1610	-	-	1453	-	-
Mov Cap-2 Maneuver	691	595	-	704	643	-	-	-	-	-	-	-
Stage 1	848	732	-	939	835	-	-	-	-	-	-	-
Stage 2	921	786	-	804	732	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	10.9	0.1	7.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1610	-	-	841	726	1453	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.162	0.05	-	-
HCM Control Delay (s)	7.2	0	-	9.3	10.9	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.6	0.2	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	103	4	2	89	0	3	0	1	0	0	1
Future Vol, veh/h	41	103	4	2	89	0	3	0	1	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	78	78	78	33	33	33	25	25	25
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	49	123	5	3	114	0	9	0	3	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	114	0	0	128	0	0	346	344	126	345	346	114
Stage 1	-	-	-	-	-	-	224	224	-	120	120	-
Stage 2	-	-	-	-	-	-	122	120	-	225	226	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1469	-	-	1452	-	-	606	577	922	607	576	936
Stage 1	-	-	-	-	-	-	776	716	-	882	794	-
Stage 2	-	-	-	-	-	-	880	794	-	775	715	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1469	-	-	1452	-	-	586	555	922	588	554	936
Mov Cap-2 Maneuver	-	-	-	-	-	-	586	555	-	588	554	-
Stage 1	-	-	-	-	-	-	748	690	-	850	792	-
Stage 2	-	-	-	-	-	-	874	792	-	745	689	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0.2	10.7	8.9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	645	1469	-	-	1452	-	-	936
HCM Lane V/C Ratio	0.019	0.033	-	-	0.002	-	-	0.004
HCM Control Delay (s)	10.7	7.5	0	-	7.5	0	-	8.9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5.8

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	76	0	6	76	0	7
Future Vol, veh/h	76	0	6	76	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	46	46	83	83	58	58
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	165	0	7	92	0	12

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	65	53	0	0	99	0
Stage 1	53	-	-	-	-	-
Stage 2	12	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	938	1012	-	-	1488	-
Stage 1	967	-	-	-	-	-
Stage 2	1008	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	938	1012	-	-	1488	-
Mov Cap-2 Maneuver	938	-	-	-	-	-
Stage 1	967	-	-	-	-	-
Stage 2	1008	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	938	1488	-	-	-
HCM Lane V/C Ratio	0.176	-	-	-	-
HCM Control Delay (s)	9.7	0	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.6	0	-	-	-

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	57	27	40	41	187	9	504	59	148	354	16
Future Volume (veh/h)	38	57	27	40	41	187	9	504	59	148	354	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	55	83	39	52	53	243	11	615	72	166	398	18
Peak Hour Factor	0.69	0.69	0.69	0.77	0.77	0.77	0.82	0.82	0.82	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	100	299	141	98	70	322	51	1143	488	212	1427	64
Arrive On Green	0.06	0.25	0.24	0.06	0.25	0.24	0.03	0.35	0.34	0.13	0.45	0.44
Sat Flow, veh/h	1767	1188	558	1767	286	1313	1640	3272	1438	1640	3187	144
Grp Volume(v), veh/h	55	0	122	52	0	296	11	615	72	166	204	212
Grp Sat Flow(s),veh/h/ln	1767	0	1747	1767	0	1599	1640	1636	1438	1640	1636	1694
Q Serve(g_s), s	3.0	0.0	5.7	2.9	0.0	17.3	0.7	15.1	3.5	9.9	7.9	8.0
Cycle Q Clear(g_c), s	3.0	0.0	5.7	2.9	0.0	17.3	0.7	15.1	3.5	9.9	7.9	8.0
Prop In Lane	1.00		0.32	1.00		0.82	1.00		1.00	1.00		0.08
Lane Grp Cap(c), veh/h	100	0	440	98	0	393	51	1143	488	212	733	759
V/C Ratio(X)	0.55	0.00	0.28	0.53	0.00	0.75	0.22	0.54	0.15	0.78	0.28	0.28
Avail Cap(c_a), veh/h	158	0	652	123	0	565	147	1143	488	318	733	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.1	0.0	30.4	46.2	0.0	35.5	47.5	26.2	23.1	42.4	17.5	17.5
Incr Delay (d2), s/veh	4.6	0.0	0.3	4.3	0.0	3.5	2.1	1.8	0.6	7.1	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	2.3	1.3	0.0	6.7	0.3	5.7	1.2	4.2	2.8	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.7	0.0	30.7	50.5	0.0	39.0	49.6	28.0	23.7	49.5	18.4	18.5
LnGrp LOS	D	A	C	D	A	D	D	C	C	D	B	B
Approach Vol, veh/h		177			348			698			582	
Approach Delay, s/veh		36.9			40.7			27.9			27.3	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.5	40.6	10.6	30.8	8.6	50.5	11.2	30.2
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	18.5	33.5	6.0	36.5	8.0	44.0	8.0	* 35
Max Q Clear Time (g_c+I1), s	11.9	17.1	4.9	7.7	2.7	10.0	5.0	19.3
Green Ext Time (p_c), s	0.3	2.7	0.0	0.4	0.0	1.4	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	31.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	93	28	114	3	56	33	109	92	1	11	62	54
Future Vol, veh/h	93	28	114	3	56	33	109	92	1	11	62	54
Peak Hour Factor	0.85	0.85	0.85	0.57	0.57	0.57	0.90	0.90	0.90	0.87	0.87	0.87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	109	33	134	5	98	58	121	102	1	13	71	62
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.1	9.8	11.2	9.7
HCM LOS	B	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	40%	3%	9%
Vol Thru, %	46%	12%	61%	49%
Vol Right, %	0%	49%	36%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	202	235	92	127
LT Vol	109	93	3	11
Through Vol	92	28	56	62
RT Vol	1	114	33	54
Lane Flow Rate	224	276	161	146
Geometry Grp	1	1	1	1
Degree of Util (X)	0.338	0.384	0.232	0.212
Departure Headway (Hd)	5.425	5.002	5.173	5.223
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	664	719	694	688
Service Time	3.455	3.03	3.207	3.258
HCM Lane V/C Ratio	0.337	0.384	0.232	0.212
HCM Control Delay	11.2	11.1	9.8	9.7
HCM Lane LOS	B	B	A	A
HCM 95th-tile Q	1.5	1.8	0.9	0.8

Intersection	
Int Delay, s/veh	5

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	24	70	70	46	63	19
Future Vol, veh/h	24	70	70	46	63	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	72	72	73	73
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	32	93	97	64	86	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	357	99	112	0	-	0
Stage 1	99	-	-	-	-	-
Stage 2	258	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	639	954	1471	-	-	-
Stage 1	922	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	596	954	1471	-	-	-
Mov Cap-2 Maneuver	596	-	-	-	-	-
Stage 1	859	-	-	-	-	-
Stage 2	783	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	10.1	4.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1471	-	827
HCM Lane V/C Ratio	-	-	0.066	-	0.152
HCM Control Delay (s)	-	-	7.6	0	10.1
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0.2	-	0.5

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	0	89	0	22	0	6	82	11	5	1
Future Vol, veh/h	10	0	0	89	0	22	0	6	82	11	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	31	31	31	68	68	68	69	69	69	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	32	0	0	131	0	32	0	9	119	15	7	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	123	166	8	107	107	69	8	0	0	128	0	0
Stage 1	38	38	-	69	69	-	-	-	-	-	-	-
Stage 2	85	128	-	38	38	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	849	725	1071	870	781	991	1606	-	-	1452	-	-
Stage 1	975	861	-	939	835	-	-	-	-	-	-	-
Stage 2	920	788	-	975	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	815	718	1071	863	773	991	1606	-	-	1452	-	-
Mov Cap-2 Maneuver	815	718	-	863	773	-	-	-	-	-	-	-
Stage 1	975	852	-	939	835	-	-	-	-	-	-	-
Stage 2	890	788	-	965	852	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	10	0	4.9
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1606	-	-	815	886	1452	-	-
HCM Lane V/C Ratio	-	-	-	0.04	0.184	0.011	-	-
HCM Control Delay (s)	0	-	-	9.6	10	7.5	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	90	1	1	99	0	4	0	1	0	0	3
Future Vol, veh/h	2	90	1	1	99	0	4	0	1	0	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	56	56	56	63	63	63	38	38	38
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	158	2	2	177	0	6	0	2	0	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	177	0	0	160	0	0	352	348	159	349	349	177
Stage 1	-	-	-	-	-	-	167	167	-	181	181	-
Stage 2	-	-	-	-	-	-	185	181	-	168	168	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1393	-	-	1413	-	-	601	574	884	604	573	863
Stage 1	-	-	-	-	-	-	833	758	-	818	748	-
Stage 2	-	-	-	-	-	-	814	748	-	832	758	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1393	-	-	1413	-	-	593	571	884	600	570	863
Mov Cap-2 Maneuver	-	-	-	-	-	-	593	571	-	600	570	-
Stage 1	-	-	-	-	-	-	831	756	-	816	747	-
Stage 2	-	-	-	-	-	-	805	747	-	828	756	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	10.7	9.2
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	635	1393	-	-	1413	-	-	863
HCM Lane V/C Ratio	0.012	0.003	-	-	0.001	-	-	0.009
HCM Control Delay (s)	10.7	7.6	0	-	7.6	0	-	9.2
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	6.3

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	76	0	8	76	0	13
Future Vol, veh/h	76	0	8	76	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	33	67	67	65	65
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	230	0	12	113	0	20

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	89	69	0	0	125	0
Stage 1	69	-	-	-	-	-
Stage 2	20	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	909	991	-	-	1455	-
Stage 1	951	-	-	-	-	-
Stage 2	1000	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	909	991	-	-	1455	-
Mov Cap-2 Maneuver	909	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	1000	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	909	1455	-	-	-
HCM Lane V/C Ratio	0.253	-	-	-	-
HCM Control Delay (s)	10.3	0	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	1	0	-	-	-

CUMULATIVE YEAR 2040
WORKSHEETS

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	72	24	67	59	304	13	632	59	284	714	47
Future Volume (veh/h)	35	72	24	67	59	304	13	632	59	284	714	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	38	78	26	73	64	330	14	687	64	309	776	51
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	81	358	119	108	73	376	94	870	368	348	1311	86
Arrive On Green	0.05	0.27	0.26	0.06	0.28	0.27	0.06	0.27	0.26	0.21	0.42	0.41
Sat Flow, veh/h	1767	1327	442	1767	259	1338	1640	3272	1431	1640	3114	205
Grp Volume(v), veh/h	38	0	104	73	0	394	14	687	64	309	408	419
Grp Sat Flow(s),veh/h/ln	1767	0	1770	1767	0	1597	1640	1636	1431	1640	1636	1682
Q Serve(g_s), s	2.4	0.0	5.2	4.6	0.0	26.6	0.9	22.0	3.9	20.6	21.7	21.7
Cycle Q Clear(g_c), s	2.4	0.0	5.2	4.6	0.0	26.6	0.9	22.0	3.9	20.6	21.7	21.7
Prop In Lane	1.00		0.25	1.00		0.84	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	81	0	478	108	0	448	94	870	368	348	689	709
V/C Ratio(X)	0.47	0.00	0.22	0.68	0.00	0.88	0.15	0.79	0.17	0.89	0.59	0.59
Avail Cap(c_a), veh/h	110	0	549	110	0	496	131	870	368	385	689	709
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	0.0	32.0	51.8	0.0	39.1	50.6	38.5	32.6	43.1	25.2	25.2
Incr Delay (d2), s/veh	4.2	0.0	0.2	15.0	0.0	15.4	0.7	7.2	1.0	20.1	3.7	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	2.1	2.4	0.0	11.7	0.4	9.1	1.4	9.8	8.4	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.6	0.0	32.3	66.8	0.0	54.5	51.3	45.7	33.6	63.2	28.9	28.8
LnGrp LOS	E	A	C	E	A	D	D	D	C	E	C	C
Approach Vol, veh/h		142			467			765			1136	
Approach Delay, s/veh		38.8			56.5			44.7			38.2	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.4	35.5	11.9	35.9	11.9	53.0	10.7	37.2
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	25.5	29.0	6.0	34.0	8.0	46.5	6.0	* 34
Max Q Clear Time (g_c+I1), s	22.6	24.0	6.6	7.2	2.9	23.7	4.4	28.6
Green Ext Time (p_c), s	0.3	1.6	0.0	0.3	0.0	3.1	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	43.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	20.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	97	109	105	7	41	18	93	113	11	90	81	112
Future Vol, veh/h	97	109	105	7	41	18	93	113	11	90	81	112
Peak Hour Factor	0.68	0.68	0.68	0.67	0.67	0.67	0.70	0.70	0.70	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	143	160	154	10	61	27	133	161	16	105	94	130
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	26.8	11.7	17.7	17.5
HCM LOS	D	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	43%	31%	11%	32%
Vol Thru, %	52%	35%	62%	29%
Vol Right, %	5%	34%	27%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	217	311	66	283
LT Vol	93	97	7	90
Through Vol	113	109	41	81
RT Vol	11	105	18	112
Lane Flow Rate	310	457	99	329
Geometry Grp	1	1	1	1
Degree of Util (X)	0.562	0.772	0.191	0.574
Departure Headway (Hd)	6.532	6.074	6.99	6.282
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	552	595	510	573
Service Time	4.595	4.126	5.074	4.344
HCM Lane V/C Ratio	0.562	0.768	0.194	0.574
HCM Control Delay	17.7	26.8	11.7	17.5
HCM Lane LOS	C	D	B	C
HCM 95th-tile Q	3.5	7.1	0.7	3.6

Intersection	
Int Delay, s/veh	4.5

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	26	56	59	68	78	30
Future Vol, veh/h	26	56	59	68	78	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	58	82	82	66	66
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	45	97	72	83	118	45

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	368	141	163	0	-	0
Stage 1	141	-	-	-	-	-
Stage 2	227	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	630	904	1410	-	-	-
Stage 1	883	-	-	-	-	-
Stage 2	808	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	596	904	1410	-	-	-
Mov Cap-2 Maneuver	596	-	-	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	808	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	10.7	3.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1410	-	777
HCM Lane V/C Ratio	-	-	0.051	-	0.182
HCM Control Delay (s)	-	-	7.7	0	10.7
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0.2	-	0.7

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	1	77	0	14	1	4	93	62	4	0
Future Vol, veh/h	1	0	1	77	0	14	1	4	93	62	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	81	81	81	79	79	79	63	63	63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	0	2	95	0	17	1	5	118	98	6	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	277	327	6	269	268	64	6	0	0	123	0	0
Stage 1	202	202	-	66	66	-	-	-	-	-	-	-
Stage 2	75	125	-	203	202	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	673	590	1074	682	636	998	1608	-	-	1458	-	-
Stage 1	798	732	-	942	838	-	-	-	-	-	-	-
Stage 2	932	791	-	797	732	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	627	550	1074	645	593	998	1608	-	-	1458	-	-
Mov Cap-2 Maneuver	627	550	-	645	593	-	-	-	-	-	-	-
Stage 1	797	683	-	941	837	-	-	-	-	-	-	-
Stage 2	915	790	-	742	683	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	11.3	0.1	7.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1608	-	-	792	682	1458	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.165	0.067	-	-
HCM Control Delay (s)	7.2	0	-	9.6	11.3	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.6	0.2	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	101	5	3	82	0	4	0	1	0	0	1
Future Vol, veh/h	55	101	5	3	82	0	4	0	1	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	78	78	78	33	33	33	25	25	25
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	65	120	6	4	105	0	12	0	3	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	105	0	0	126	0	0	368	366	123	368	369	105
Stage 1	-	-	-	-	-	-	253	253	-	113	113	-
Stage 2	-	-	-	-	-	-	115	113	-	255	256	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1480	-	-	1454	-	-	587	561	925	587	559	947
Stage 1	-	-	-	-	-	-	749	696	-	890	800	-
Stage 2	-	-	-	-	-	-	887	800	-	747	694	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1480	-	-	1454	-	-	562	533	925	563	531	947
Mov Cap-2 Maneuver	-	-	-	-	-	-	562	533	-	563	531	-
Stage 1	-	-	-	-	-	-	714	663	-	848	798	-
Stage 2	-	-	-	-	-	-	881	798	-	710	661	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.6	0.3	11.1	8.8
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	610	1480	-	-	1454	-	-	947
HCM Lane V/C Ratio	0.025	0.044	-	-	0.003	-	-	0.004
HCM Control Delay (s)	11.1	7.5	0	-	7.5	0	-	8.8
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5.1

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	48	0	8	48	0	10
Future Vol, veh/h	48	0	8	48	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	46	46	83	83	58	58
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	104	0	10	58	0	17

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	56	39	0	0	68	0
Stage 1	39	-	-	-	-	-
Stage 2	17	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	949	1030	-	-	1527	-
Stage 1	981	-	-	-	-	-
Stage 2	1003	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	949	1030	-	-	1527	-
Mov Cap-2 Maneuver	949	-	-	-	-	-
Stage 1	981	-	-	-	-	-
Stage 2	1003	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	9.3	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	949	1527	-	-	-
HCM Lane V/C Ratio	0.11	-	-	-	-
HCM Control Delay (s)	9.3	0	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.4	0	-	-	-

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	94	44	57	67	274	15	826	87	210	579	27
Future Volume (veh/h)	62	94	44	57	67	274	15	826	87	210	579	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	67	102	48	62	73	298	16	898	95	228	629	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	100	327	154	95	85	346	116	1053	450	266	1315	61
Arrive On Green	0.06	0.28	0.27	0.05	0.27	0.26	0.07	0.32	0.31	0.16	0.41	0.40
Sat Flow, veh/h	1767	1188	559	1767	316	1290	1640	3272	1436	1640	3183	147
Grp Volume(v), veh/h	67	0	150	62	0	371	16	898	95	228	323	335
Grp Sat Flow(s),veh/h/ln	1767	0	1747	1767	0	1606	1640	1636	1436	1640	1636	1694
Q Serve(g_s), s	4.3	0.0	7.8	4.0	0.0	25.3	1.1	29.5	5.6	15.6	16.6	16.6
Cycle Q Clear(g_c), s	4.3	0.0	7.8	4.0	0.0	25.3	1.1	29.5	5.6	15.6	16.6	16.6
Prop In Lane	1.00		0.32	1.00		0.80	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	100	0	481	95	0	430	116	1053	450	266	676	700
V/C Ratio(X)	0.67	0.00	0.31	0.65	0.00	0.86	0.14	0.85	0.21	0.86	0.48	0.48
Avail Cap(c_a), veh/h	108	0	532	108	0	489	128	1053	450	278	676	700
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.1	0.0	33.1	53.3	0.0	40.5	50.1	36.4	29.0	46.9	24.7	24.7
Incr Delay (d2), s/veh	13.4	0.0	0.4	11.2	0.0	13.4	0.5	8.7	1.1	21.9	2.4	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	3.2	2.0	0.0	11.0	0.4	12.2	2.0	7.6	6.4	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	0.0	33.5	64.5	0.0	53.9	50.7	45.2	30.1	68.8	27.1	27.0
LnGrp LOS	E	A	C	E	A	D	D	D	C	E	C	C
Approach Vol, veh/h		217			433			1009			886	
Approach Delay, s/veh		43.7			55.4			43.8			37.8	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.1	42.5	11.2	37.2	13.6	53.0	12.0	36.3
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	18.5	36.0	6.0	34.0	8.0	46.5	6.0	* 34
Max Q Clear Time (g_c+I1), s	17.6	31.5	6.0	9.8	3.1	18.6	6.3	27.3
Green Ext Time (p_c), s	0.1	1.9	0.0	0.5	0.0	2.4	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	43.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	126	38	119	4	75	45	113	124	1	15	83	72
Future Vol, veh/h	126	38	119	4	75	45	113	124	1	15	83	72
Peak Hour Factor	0.85	0.85	0.85	0.57	0.57	0.57	0.90	0.90	0.90	0.87	0.87	0.87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	148	45	140	7	132	79	126	138	1	17	95	83
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.3	11.8	13.6	11.5
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	47%	45%	3%	9%
Vol Thru, %	52%	13%	60%	49%
Vol Right, %	0%	42%	36%	42%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	238	283	124	170
LT Vol	113	126	4	15
Through Vol	124	38	75	83
RT Vol	1	119	45	72
Lane Flow Rate	264	333	218	195
Geometry Grp	1	1	1	1
Degree of Util (X)	0.437	0.512	0.344	0.314
Departure Headway (Hd)	5.952	5.532	5.69	5.779
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	600	646	627	616
Service Time	4.034	3.608	3.775	3.868
HCM Lane V/C Ratio	0.44	0.515	0.348	0.317
HCM Control Delay	13.6	14.3	11.8	11.5
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.2	2.9	1.5	1.3

Intersection	
Int Delay, s/veh	4.3

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	29	60	60	62	85	22
Future Vol, veh/h	29	60	60	62	85	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	72	72	73	73
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	39	80	83	86	116	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	383	131	146	0	-	0
Stage 1	131	-	-	-	-	-
Stage 2	252	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	618	916	1430	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	580	916	1430	-	-	-
Mov Cap-2 Maneuver	580	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	788	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	10.5	3.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1430	-	771
HCM Lane V/C Ratio	-	-	0.058	-	0.154
HCM Control Delay (s)	-	-	7.7	0	10.5
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0.2	-	0.5

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	0	0	82	0	30	0	8	72	15	7	1
Future Vol, veh/h	14	0	0	82	0	30	0	8	72	15	7	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	31	31	31	68	68	68	69	69	69	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	45	0	0	121	0	44	0	12	104	21	10	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	139	169	11	117	117	64	11	0	0	116	0	0
Stage 1	53	53	-	64	64	-	-	-	-	-	-	-
Stage 2	86	116	-	53	53	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	829	722	1067	857	771	998	1602	-	-	1466	-	-
Stage 1	957	849	-	944	840	-	-	-	-	-	-	-
Stage 2	919	798	-	957	849	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	784	712	1067	848	760	998	1602	-	-	1466	-	-
Mov Cap-2 Maneuver	784	712	-	848	760	-	-	-	-	-	-	-
Stage 1	957	837	-	944	840	-	-	-	-	-	-	-
Stage 2	878	798	-	944	837	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	10	0	4.9
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1602	-	-	784	884	1466	-	-
HCM Lane V/C Ratio	-	-	-	0.058	0.186	0.014	-	-
HCM Control Delay (s)	0	-	-	9.9	10	7.5	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.7	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	83	1	1	96	0	5	0	1	0	0	4
Future Vol, veh/h	3	83	1	1	96	0	5	0	1	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	56	56	56	63	63	63	38	38	38
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	146	2	2	171	0	8	0	2	0	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	171	0	0	148	0	0	338	332	147	333	333	171
Stage 1	-	-	-	-	-	-	157	157	-	175	175	-
Stage 2	-	-	-	-	-	-	181	175	-	158	158	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1400	-	-	1427	-	-	614	586	897	619	585	870
Stage 1	-	-	-	-	-	-	843	766	-	824	752	-
Stage 2	-	-	-	-	-	-	818	752	-	842	765	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1400	-	-	1427	-	-	604	582	897	615	581	870
Mov Cap-2 Maneuver	-	-	-	-	-	-	604	582	-	615	581	-
Stage 1	-	-	-	-	-	-	840	763	-	821	750	-
Stage 2	-	-	-	-	-	-	806	750	-	837	762	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	10.7	9.2
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	639	1400	-	-	1427	-	-	870
HCM Lane V/C Ratio	0.015	0.004	-	-	0.001	-	-	0.012
HCM Control Delay (s)	10.7	7.6	0	-	7.5	0	-	9.2
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5.3

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	48	0	11	48	0	18
Future Vol, veh/h	48	0	11	48	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	33	67	67	65	65
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	145	0	16	72	0	28

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	80	52	0	0	88	0
Stage 1	52	-	-	-	-	-
Stage 2	28	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	920	1013	-	-	1501	-
Stage 1	968	-	-	-	-	-
Stage 2	992	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	920	1013	-	-	1501	-
Mov Cap-2 Maneuver	920	-	-	-	-	-
Stage 1	968	-	-	-	-	-
Stage 2	992	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	9.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	920	1501	-	-	-
HCM Lane V/C Ratio	0.158	-	-	-	-
HCM Control Delay (s)	9.6	0	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.6	0	-	-	-

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	72	24	73	59	324	13	632	64	303	714	47
Future Volume (veh/h)	35	72	24	73	59	324	13	632	64	303	714	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	38	78	26	79	64	352	14	687	70	329	776	51
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	80	367	122	106	70	387	118	842	356	364	1269	83
Arrive On Green	0.05	0.28	0.27	0.06	0.29	0.28	0.07	0.26	0.25	0.22	0.41	0.40
Sat Flow, veh/h	1767	1327	442	1767	245	1350	1640	3272	1430	1640	3114	205
Grp Volume(v), veh/h	38	0	104	79	0	416	14	687	70	329	408	419
Grp Sat Flow(s),veh/h/ln	1767	0	1770	1767	0	1595	1640	1636	1430	1640	1636	1682
Q Serve(g_s), s	2.4	0.0	5.3	5.1	0.0	29.4	0.9	23.0	4.5	22.8	22.9	23.0
Cycle Q Clear(g_c), s	2.4	0.0	5.3	5.1	0.0	29.4	0.9	23.0	4.5	22.8	22.9	23.0
Prop In Lane	1.00		0.25	1.00		0.85	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	80	0	489	106	0	458	118	842	356	364	667	686
V/C Ratio(X)	0.48	0.00	0.21	0.74	0.00	0.91	0.12	0.82	0.20	0.90	0.61	0.61
Avail Cap(c_a), veh/h	106	0	532	106	0	479	127	842	356	373	667	686
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	0.0	32.5	53.9	0.0	40.5	50.6	40.7	34.6	44.1	27.2	27.3
Incr Delay (d2), s/veh	4.4	0.0	0.2	24.4	0.0	20.7	0.4	8.6	1.2	24.3	4.1	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	2.2	2.9	0.0	13.5	0.4	9.7	1.6	11.2	9.0	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.7	0.0	32.8	78.3	0.0	61.2	51.1	49.3	35.8	68.5	31.4	31.3
LnGrp LOS	E	A	C	E	A	E	D	D	D	E	C	C
Approach Vol, veh/h		142			495			771			1156	
Approach Delay, s/veh		39.7			63.9			48.1			41.9	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.4	35.5	12.0	37.7	13.9	53.0	10.7	38.9
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	25.5	29.0	6.0	34.0	8.0	46.5	6.0	* 34
Max Q Clear Time (g_c+I1), s	24.8	25.0	7.1	7.3	2.9	25.0	4.4	31.4
Green Ext Time (p_c), s	0.1	1.3	0.0	0.3	0.0	3.1	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	47.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	24.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	97	109	130	7	41	18	118	113	11	90	81	112
Future Vol, veh/h	97	109	130	7	41	18	118	113	11	90	81	112
Peak Hour Factor	0.70	0.70	0.70	0.67	0.67	0.67	0.70	0.70	0.70	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	139	156	186	10	61	27	169	161	16	105	94	130
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	32.7	12.3	21.3	18.9
HCM LOS	D	B	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	29%	11%	32%
Vol Thru, %	47%	32%	62%	29%
Vol Right, %	5%	39%	27%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	242	336	66	283
LT Vol	118	97	7	90
Through Vol	113	109	41	81
RT Vol	11	130	18	112
Lane Flow Rate	346	480	99	329
Geometry Grp	1	1	1	1
Degree of Util (X)	0.644	0.829	0.203	0.596
Departure Headway (Hd)	6.704	6.218	7.415	6.52
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	536	581	487	550
Service Time	4.792	4.293	5.415	4.611
HCM Lane V/C Ratio	0.646	0.826	0.203	0.598
HCM Control Delay	21.3	32.7	12.3	18.9
HCM Lane LOS	C	D	B	C
HCM 95th-tile Q	4.5	8.6	0.8	3.9

Intersection	
Int Delay, s/veh	5.4

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	29	81	84	68	78	33
Future Vol, veh/h	29	81	84	68	78	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	58	82	82	66	66
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	50	140	102	83	118	50

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	430	143	168	0	-	0
Stage 1	143	-	-	-	-	-
Stage 2	287	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	580	902	1404	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	536	902	1404	-	-	-
Mov Cap-2 Maneuver	536	-	-	-	-	-
Stage 1	815	-	-	-	-	-
Stage 2	759	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	11.3	4.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1404	-	764
HCM Lane V/C Ratio	-	-	0.073	-	0.248
HCM Control Delay (s)	-	-	7.8	0	11.3
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0.2	-	1

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	1	105	0	14	1	4	121	62	4	0
Future Vol, veh/h	1	0	1	105	0	14	1	4	121	62	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	50	81	81	81	79	79	79	63	63	63
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	2	0	2	130	0	17	1	5	153	98	6	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	294	362	6	287	286	82	6	0	0	158	0	0
Stage 1	202	202	-	84	84	-	-	-	-	-	-	-
Stage 2	92	160	-	203	202	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	656	564	1074	663	622	975	1608	-	-	1416	-	-
Stage 1	798	732	-	922	823	-	-	-	-	-	-	-
Stage 2	913	764	-	797	732	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	610	525	1074	627	578	975	1608	-	-	1416	-	-
Mov Cap-2 Maneuver	610	525	-	627	578	-	-	-	-	-	-	-
Stage 1	797	681	-	921	822	-	-	-	-	-	-	-
Stage 2	896	763	-	741	681	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	12.1	0.1	7.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1608	-	-	778	654	1416	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.225	0.07	-	-
HCM Control Delay (s)	7.2	0	-	9.7	12.1	7.7	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.9	0.2	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	55	129	5	3	110	0	4	0	1	0	0	1
Future Vol, veh/h	55	129	5	3	110	0	4	0	1	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	78	78	78	33	33	33	25	25	25
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	65	154	6	4	141	0	12	0	3	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	141	0	0	160	0	0	438	436	157	438	439	141
Stage 1	-	-	-	-	-	-	287	287	-	149	149	-
Stage 2	-	-	-	-	-	-	151	149	-	289	290	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1436	-	-	1413	-	-	527	512	886	527	510	904
Stage 1	-	-	-	-	-	-	718	673	-	851	772	-
Stage 2	-	-	-	-	-	-	849	772	-	716	670	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1436	-	-	1413	-	-	503	485	886	504	483	904
Mov Cap-2 Maneuver	-	-	-	-	-	-	503	485	-	504	483	-
Stage 1	-	-	-	-	-	-	682	639	-	808	770	-
Stage 2	-	-	-	-	-	-	843	770	-	678	637	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.2	0.2	11.7	9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	551	1436	-	-	1413	-	-	904
HCM Lane V/C Ratio	0.027	0.046	-	-	0.003	-	-	0.004
HCM Control Delay (s)	11.7	7.6	0	-	7.6	0	-	9
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5.6

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	76	0	8	76	0	10
Future Vol, veh/h	76	0	8	76	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	46	46	83	83	58	58
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	165	0	10	92	0	17

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	73	56	0	0	102	0
Stage 1	56	-	-	-	-	-
Stage 2	17	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	928	1008	-	-	1484	-
Stage 1	964	-	-	-	-	-
Stage 2	1003	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	928	1008	-	-	1484	-
Mov Cap-2 Maneuver	928	-	-	-	-	-
Stage 1	964	-	-	-	-	-
Stage 2	1003	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	928	1484	-	-	-
HCM Lane V/C Ratio	0.178	-	-	-	-
HCM Control Delay (s)	9.7	0	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.6	0	-	-	-

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	94	44	63	67	293	15	826	93	230	579	27
Future Volume (veh/h)	62	94	44	63	67	293	15	826	93	230	579	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	67	102	48	68	73	318	16	898	101	250	629	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	100	331	156	101	82	358	126	1031	440	272	1288	59
Arrive On Green	0.06	0.28	0.27	0.06	0.27	0.27	0.08	0.32	0.31	0.17	0.40	0.40
Sat Flow, veh/h	1767	1188	559	1767	299	1304	1640	3272	1436	1640	3183	147
Grp Volume(v), veh/h	67	0	150	68	0	391	16	898	101	250	323	335
Grp Sat Flow(s),veh/h/ln	1767	0	1747	1767	0	1603	1640	1636	1436	1640	1636	1694
Q Serve(g_s), s	4.4	0.0	8.0	4.4	0.0	27.5	1.1	30.4	6.2	17.6	17.2	17.3
Cycle Q Clear(g_c), s	4.4	0.0	8.0	4.4	0.0	27.5	1.1	30.4	6.2	17.6	17.2	17.3
Prop In Lane	1.00		0.32	1.00		0.81	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	100	0	486	101	0	441	126	1031	440	272	662	685
V/C Ratio(X)	0.67	0.00	0.31	0.67	0.00	0.89	0.13	0.87	0.23	0.92	0.49	0.49
Avail Cap(c_a), veh/h	105	0	521	105	0	478	126	1031	440	272	662	685
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.3	0.0	33.6	54.3	0.0	41.2	50.5	38.0	30.4	48.2	25.9	26.0
Incr Delay (d2), s/veh	14.3	0.0	0.4	14.7	0.0	17.2	0.5	10.0	1.2	33.7	2.6	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	3.3	2.3	0.0	12.3	0.4	12.8	2.2	9.4	6.7	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.6	0.0	33.9	68.9	0.0	58.4	51.0	48.0	31.6	81.8	28.5	28.5
LnGrp LOS	E	A	C	E	A	E	D	D	C	F	C	C
Approach Vol, veh/h		217			459			1015			908	
Approach Delay, s/veh		44.6			60.0			46.4			43.2	
Approach LOS		D			E			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	42.5	11.7	38.2	14.5	53.0	12.1	37.8
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	18.5	36.0	6.0	34.0	8.0	46.5	6.0	* 34
Max Q Clear Time (g_c+I1), s	19.6	32.4	6.4	10.0	3.1	19.3	6.4	29.5
Green Ext Time (p_c), s	0.0	1.6	0.0	0.5	0.0	2.4	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	47.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	14.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	126	38	144	4	75	45	139	124	1	15	83	72
Future Vol, veh/h	126	38	144	4	75	45	139	124	1	15	83	72
Peak Hour Factor	0.85	0.85	0.85	0.57	0.57	0.57	0.90	0.90	0.90	0.87	0.87	0.87
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	148	45	169	7	132	79	154	138	1	17	95	83
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.4	12.4	15.4	12.1
HCM LOS	C	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	53%	41%	3%	9%
Vol Thru, %	47%	12%	60%	49%
Vol Right, %	0%	47%	36%	42%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	264	308	124	170
LT Vol	139	126	4	15
Through Vol	124	38	75	83
RT Vol	1	144	45	72
Lane Flow Rate	293	362	218	195
Geometry Grp	1	1	1	1
Degree of Util (X)	0.506	0.578	0.362	0.331
Departure Headway (Hd)	6.211	5.746	5.997	6.089
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	581	630	598	590
Service Time	4.233	3.766	4.046	4.139
HCM Lane V/C Ratio	0.504	0.575	0.365	0.331
HCM Control Delay	15.4	16.4	12.4	12.1
HCM Lane LOS	C	C	B	B
HCM 95th-tile Q	2.8	3.7	1.6	1.4

Intersection	
Int Delay, s/veh	5.2

Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Vol, veh/h	32	85	85	62	85	25
Future Vol, veh/h	32	85	85	62	85	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	72	72	73	73
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	43	113	118	86	116	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	455	133	150	0	-	0
Stage 1	133	-	-	-	-	-
Stage 2	322	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	561	913	1425	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	732	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	512	913	1425	-	-	-
Mov Cap-2 Maneuver	512	-	-	-	-	-
Stage 1	813	-	-	-	-	-
Stage 2	732	-	-	-	-	-

Approach	SB	SE	NW
HCM Control Delay, s	11	4.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NWT	NWR	SEL	SET	SBLn1
Capacity (veh/h)	-	-	1425	-	752
HCM Lane V/C Ratio	-	-	0.083	-	0.207
HCM Control Delay (s)	-	-	7.8	0	11
HCM Lane LOS	-	-	A	A	B
HCM 95th %tile Q(veh)	-	-	0.3	-	0.8

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	0	0	110	0	30	0	8	100	15	7	1
Future Vol, veh/h	14	0	0	110	0	30	0	8	100	15	7	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	31	31	31	68	68	68	69	69	69	71	71	71
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	45	0	0	162	0	44	0	12	145	21	10	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	160	210	11	138	138	85	11	0	0	157	0	0
Stage 1	53	53	-	85	85	-	-	-	-	-	-	-
Stage 2	107	157	-	53	53	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	803	685	1067	830	751	971	1602	-	-	1417	-	-
Stage 1	957	849	-	920	822	-	-	-	-	-	-	-
Stage 2	896	766	-	957	849	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	758	675	1067	821	740	971	1602	-	-	1417	-	-
Mov Cap-2 Maneuver	758	675	-	821	740	-	-	-	-	-	-	-
Stage 1	957	836	-	920	822	-	-	-	-	-	-	-
Stage 2	855	766	-	943	836	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	10.6	0	4.9
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1602	-	-	758	849	1417	-	-
HCM Lane V/C Ratio	-	-	-	0.06	0.242	0.015	-	-
HCM Control Delay (s)	0	-	-	10.1	10.6	7.6	0	-
HCM Lane LOS	A	-	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.9	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	111	1	1	124	0	5	0	1	0	0	4
Future Vol, veh/h	3	111	1	1	124	0	5	0	1	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	57	57	57	56	56	56	63	63	63	38	38	38
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	195	2	2	221	0	8	0	2	0	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	221	0	0	197	0	0	437	431	196	432	432	221
Stage 1	-	-	-	-	-	-	206	206	-	225	225	-
Stage 2	-	-	-	-	-	-	231	225	-	207	207	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1342	-	-	1370	-	-	528	516	843	532	515	816
Stage 1	-	-	-	-	-	-	794	729	-	775	716	-
Stage 2	-	-	-	-	-	-	770	716	-	793	729	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1342	-	-	1370	-	-	519	513	843	529	512	816
Mov Cap-2 Maneuver	-	-	-	-	-	-	519	513	-	529	512	-
Stage 1	-	-	-	-	-	-	791	726	-	772	715	-
Stage 2	-	-	-	-	-	-	759	715	-	788	726	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	11.6	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	555	1342	-	-	1370	-	-	816
HCM Lane V/C Ratio	0.017	0.004	-	-	0.001	-	-	0.013
HCM Control Delay (s)	11.6	7.7	0	-	7.6	0	-	9.5
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	6.2

Movement	NBL	NBR	SET	SER	NWL	NWT
Lane Configurations						
Traffic Vol, veh/h	76	0	11	76	0	18
Future Vol, veh/h	76	0	11	76	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	33	33	67	67	65	65
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	230	0	16	113	0	28

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	101	73	0	0	129	0
Stage 1	73	-	-	-	-	-
Stage 2	28	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	895	986	-	-	1451	-
Stage 1	947	-	-	-	-	-
Stage 2	992	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	895	986	-	-	1451	-
Mov Cap-2 Maneuver	895	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	992	-	-	-	-	-

Approach	NB	SE	NW
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBLn1	NWL	NWT	SET	SER
Capacity (veh/h)	895	1451	-	-	-
HCM Lane V/C Ratio	0.257	-	-	-	-
HCM Control Delay (s)	10.4	0	-	-	-
HCM Lane LOS	B	A	-	-	-
HCM 95th %tile Q(veh)	1	0	-	-	-

MITIGATION WORKSHEETS

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	72	24	67	59	304	13	632	59	284	714	47
Future Volume (veh/h)	35	72	24	67	59	304	13	632	59	284	714	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	38	78	26	73	64	330	14	687	64	309	776	51
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	88	250	83	112	366	616	63	1009	428	358	1521	100
Arrive On Green	0.05	0.19	0.18	0.06	0.20	0.19	0.04	0.31	0.30	0.22	0.49	0.48
Sat Flow, veh/h	1767	1325	442	1767	1856	1547	1640	3272	1435	1640	3114	205
Grp Volume(v), veh/h	38	0	104	73	64	330	14	687	64	309	408	419
Grp Sat Flow(s),veh/h/ln	1767	0	1767	1767	1856	1547	1640	1636	1435	1640	1636	1683
Q Serve(g_s), s	2.0	0.0	4.9	3.9	2.8	9.6	0.8	17.9	3.2	17.7	16.5	16.5
Cycle Q Clear(g_c), s	2.0	0.0	4.9	3.9	2.8	9.6	0.8	17.9	3.2	17.7	16.5	16.5
Prop In Lane	1.00		0.25	1.00		1.00	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	88	0	334	112	366	616	63	1009	428	358	799	822
V/C Ratio(X)	0.43	0.00	0.31	0.65	0.17	0.54	0.22	0.68	0.15	0.86	0.51	0.51
Avail Cap(c_a), veh/h	127	0	636	127	668	868	152	1009	428	447	799	822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	34.1	44.5	32.4	8.9	45.4	29.4	25.1	36.6	16.9	17.0
Incr Delay (d2), s/veh	3.3	0.0	0.5	9.4	0.2	0.7	1.8	3.7	0.7	13.5	2.3	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	2.0	1.9	1.2	3.8	0.3	6.9	1.1	7.9	5.8	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.2	0.0	34.6	53.9	32.7	9.7	47.2	33.1	25.8	50.1	19.3	19.3
LnGrp LOS	D	A	C	D	C	A	D	C	C	D	B	B
Approach Vol, veh/h		142			467			765			1136	
Approach Delay, s/veh		38.2			19.7			32.8			27.7	
Approach LOS		D			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.7	35.5	11.2	23.9	9.2	53.0	10.4	24.7
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	25.5	29.0	6.0	34.0	8.0	46.5	6.0	* 34
Max Q Clear Time (g_c+I1), s	19.7	19.9	5.9	6.9	2.8	18.5	4.0	11.6
Green Ext Time (p_c), s	0.6	2.3	0.0	0.3	0.0	3.2	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	28.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	94	44	57	67	274	15	826	87	210	579	27
Future Volume (veh/h)	62	94	44	57	67	274	15	826	87	210	579	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	67	102	48	62	73	298	16	898	95	228	629	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	106	237	112	104	359	530	103	1191	510	272	1488	69
Arrive On Green	0.06	0.20	0.19	0.06	0.19	0.18	0.06	0.36	0.35	0.17	0.47	0.46
Sat Flow, veh/h	1767	1186	558	1767	1856	1547	1640	3272	1439	1640	3183	147
Grp Volume(v), veh/h	67	0	150	62	73	298	16	898	95	228	323	335
Grp Sat Flow(s),veh/h/ln	1767	0	1744	1767	1856	1547	1640	1636	1439	1640	1636	1694
Q Serve(g_s), s	3.8	0.0	7.7	3.5	3.4	10.1	0.9	24.4	4.6	13.7	13.3	13.4
Cycle Q Clear(g_c), s	3.8	0.0	7.7	3.5	3.4	10.1	0.9	24.4	4.6	13.7	13.3	13.4
Prop In Lane	1.00		0.32	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	106	0	349	104	359	530	103	1191	510	272	765	792
V/C Ratio(X)	0.63	0.00	0.43	0.60	0.20	0.56	0.16	0.75	0.19	0.84	0.42	0.42
Avail Cap(c_a), veh/h	122	0	601	122	639	763	145	1191	510	315	765	792
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.7	0.0	35.7	46.7	34.4	11.8	45.1	28.3	22.7	41.1	18.0	18.0
Incr Delay (d2), s/veh	8.2	0.0	0.8	5.8	0.3	0.9	0.7	4.4	0.8	15.9	1.7	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	3.1	1.6	1.5	4.1	0.4	9.4	1.6	6.4	4.8	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.9	0.0	36.6	52.5	34.7	12.8	45.8	32.8	23.5	57.0	19.7	19.7
LnGrp LOS	D	A	D	D	C	B	D	C	C	E	B	B
Approach Vol, veh/h		217			433			1009			886	
Approach Delay, s/veh		42.2			22.1			32.1			29.3	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.4	42.5	11.0	25.8	11.9	53.0	11.6	25.2
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	18.5	36.0	6.0	34.0	8.0	46.5	6.0	* 34
Max Q Clear Time (g_c+I1), s	15.7	26.4	5.5	9.7	2.9	15.4	5.8	12.1
Green Ext Time (p_c), s	0.2	3.2	0.0	0.5	0.0	2.4	0.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	30.3
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	72	24	73	59	324	13	632	64	303	714	47
Future Volume (veh/h)	35	72	24	73	59	324	13	632	64	303	714	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	38	78	26	79	64	352	14	687	70	329	776	51
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	87	249	83	118	372	638	87	985	417	375	1484	98
Arrive On Green	0.05	0.19	0.18	0.07	0.20	0.19	0.05	0.30	0.29	0.23	0.48	0.47
Sat Flow, veh/h	1767	1325	442	1767	1856	1548	1640	3272	1434	1640	3114	205
Grp Volume(v), veh/h	38	0	104	79	64	352	14	687	70	329	408	419
Grp Sat Flow(s),veh/h/ln	1767	0	1767	1767	1856	1548	1640	1636	1434	1640	1636	1683
Q Serve(g_s), s	2.1	0.0	5.1	4.4	2.8	10.5	0.8	18.5	3.6	19.3	17.3	17.3
Cycle Q Clear(g_c), s	2.1	0.0	5.1	4.4	2.8	10.5	0.8	18.5	3.6	19.3	17.3	17.3
Prop In Lane	1.00		0.25	1.00		1.00	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	87	0	333	118	372	638	87	985	417	375	780	802
V/C Ratio(X)	0.44	0.00	0.31	0.67	0.17	0.55	0.16	0.70	0.17	0.88	0.52	0.52
Avail Cap(c_a), veh/h	124	0	621	124	652	872	148	985	417	436	780	802
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	0.0	35.0	45.4	33.0	8.9	45.1	30.8	26.3	37.1	18.2	18.2
Incr Delay (d2), s/veh	3.4	0.0	0.5	12.4	0.2	0.7	0.9	4.1	0.9	16.4	2.5	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	2.1	2.2	1.2	4.1	0.3	7.2	1.2	8.8	6.2	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.5	0.0	35.5	57.8	33.2	9.6	45.9	34.9	27.2	53.5	20.7	20.7
LnGrp LOS	D	A	D	E	C	A	D	C	C	D	C	C
Approach Vol, veh/h		142			495			771			1156	
Approach Delay, s/veh		39.3			20.4			34.4			30.0	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.3	35.5	11.6	24.3	10.8	53.0	10.4	25.5
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	25.5	29.0	6.0	34.0	8.0	46.5	6.0	* 34
Max Q Clear Time (g_c+I1), s	21.3	20.5	6.4	7.1	2.8	19.3	4.1	12.5
Green Ext Time (p_c), s	0.5	2.2	0.0	0.3	0.0	3.2	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	30.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
1: SR-65 & Avenue 128

04/05/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	94	44	63	67	293	15	826	93	230	579	27
Future Volume (veh/h)	62	94	44	63	67	293	15	826	93	230	579	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1722	1722	1722	1722	1722	1722
Adj Flow Rate, veh/h	67	102	48	68	73	318	16	898	101	250	629	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	12	12	12	12	12	12
Cap, veh/h	104	239	112	105	365	554	126	1163	497	291	1453	67
Arrive On Green	0.06	0.20	0.19	0.06	0.20	0.19	0.08	0.36	0.35	0.18	0.46	0.45
Sat Flow, veh/h	1767	1186	558	1767	1856	1547	1640	3272	1438	1640	3183	147
Grp Volume(v), veh/h	67	0	150	68	73	318	16	898	101	250	323	335
Grp Sat Flow(s),veh/h/ln	1767	0	1745	1767	1856	1547	1640	1636	1438	1640	1636	1694
Q Serve(g_s), s	3.9	0.0	7.8	3.9	3.4	11.0	0.9	25.4	5.1	15.4	13.9	14.0
Cycle Q Clear(g_c), s	3.9	0.0	7.8	3.9	3.4	11.0	0.9	25.4	5.1	15.4	13.9	14.0
Prop In Lane	1.00		0.32	1.00		1.00	1.00		1.00	1.00		0.09
Lane Grp Cap(c), veh/h	104	0	351	105	365	554	126	1163	497	291	747	773
V/C Ratio(X)	0.64	0.00	0.43	0.65	0.20	0.57	0.13	0.77	0.20	0.86	0.43	0.43
Avail Cap(c_a), veh/h	119	0	587	119	624	769	142	1163	497	307	747	773
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.9	0.0	36.5	47.9	35.0	11.7	44.8	29.8	24.0	41.5	19.2	19.2
Incr Delay (d2), s/veh	9.3	0.0	0.8	9.9	0.3	0.9	0.5	5.0	0.9	20.2	1.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	3.2	1.9	1.5	0.1	0.4	9.9	1.7	7.5	5.1	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.2	0.0	37.3	57.8	35.2	12.7	45.3	34.8	24.9	61.7	21.0	21.0
LnGrp LOS	E	A	D	E	D	B	D	C	C	E	C	C
Approach Vol, veh/h		217			459			1015			908	
Approach Delay, s/veh		43.4			23.0			34.0			32.2	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.0	42.5	11.2	26.5	13.5	53.0	11.6	26.0
Change Period (Y+Rc), s	6.5	6.5	6.0	6.5	6.5	6.5	6.5	* 6.5
Max Green Setting (Gmax), s	18.5	36.0	6.0	34.0	8.0	46.5	6.0	* 34
Max Q Clear Time (g_c+I1), s	17.4	27.4	5.9	9.8	2.9	16.0	5.9	13.0
Green Ext Time (p_c), s	0.1	3.0	0.0	0.5	0.0	2.4	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	32.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX "H"

NOTICE OF PREPARATION AND COMMENTS RECEIVED

NOTICE OF PREPARATION

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NOTICE OF PREPARATION – DEER CREEK MINE EXPANSION (PMR 19-001)

AGENCY / ENTITY	DOCUMENTS SENT					DELIVERY METHOD					COMMENTS RECEIVED
	Hard Copy			CD							
	Cover Letter	NOC	NOP	Electronic Submittal Form	NOP	Hand Delivered / Interoffice	E-mail	FedEx	Certified US Mail	Return Receipt	
AVAILABILITY OF PUBLIC VIEWING											
Tulare County Resource Management Agency 5961 S. Mooney Blvd. Visalia, CA 93277-9394			X			4/9/19					
Tulare County Website: https://tularecounty.ca.gov/rma/index.cfm/projects/planning-projects/applicant-projects/deer-creek-mine-expansion/notice-of-preparation-for-deer-creek-mine-expansion-pmr-19-001/											
STATE CLEARINGHOUSE (Agencies below were marked with "X" on the NOC)	X	X	15					4/9/19		4/15/19	
• Air Resources Board											
• Department of Conservation											
• Department of Fish and Wildlife Region #4											
• Department of Food and Agriculture											
• Department of Forestry & Fire Protection											
• Department of General Services											
• Department of Resources and Recycling and Recovery											
• Department of Transportation – District #6											
• Department of Toxic Substances Control											
• Native American Heritage Commission											
• Natural Resources Agency											
• Office of Historic Preservation											
• Public Utilities Commission											
• Regional Water Quality Control Board – District #5F											
• State Water Resources Control Board – Water Quality											
MILITARY											
Mr. David S. Hulse Naval Facilities Engineering Command Community Plans Liaison Officer (CPLO) 1220 Pacific Highway AM-3 San Diego, CA 92132			X						4/9/19 7013 0600 0002 1698 0513	Per USPS: package in transit as of 4/15/19	

NOTICE OF PREPARATION – DEER CREEK MINE EXPANSION (PMR 19-001)

AGENCY / ENTITY	DOCUMENTS SENT					DELIVERY METHOD					COMMENTS RECEIVED
	Hard Copy			CD							
	Cover Letter	NOC	NOP	Electronic Submittal Form	NOP	Hand Delivered / Interoffice	E-mail	FedEx	Certified US Mail	Return Receipt	
FEDERAL AGENCIES											
U.S. Army Corps of Engineers Sacramento District 1325 J Street, Room 1350 Sacramento, CA 95814-2922			X						4/9/19 7013 0600 0002 1698 0506	4/18/19	
U.S. Fish and Wildlife Service Sacramento Fish & Wildlife Office 2800 Cottage Way, Room W-2605 Sacramento, CA 95825-1846			X						4/9/19 7013 0600 0002 1698 0490	4/22/19	
U.S. Department of Agriculture Natural Resources Conservation Service Visalia Service Center 3530 W. Orchard Ct. Visalia, CA 93277-7055			X						4/9/19 7014 0150 0001 1537 1152	4/12/19	
STATE & REGIONAL AGENCIES											
San Joaquin Valley Unified Air Pollution Control District Permit Services – CEQA Division 1990 E. Gettysburg Ave. Fresno, CA 93726 CEQA@valleyair.org Patia.Siong@valleyair.org			X				4/10/19		4/9/19 7013 0600 0002 1698 0551	4/15/19	
CA Dept. of Fish and Wildlife Region 4 – Central Region 1234 E. Shaw Avenue Fresno, CA 93710 JVANCE@dfg.ca.gov Craig.Bailey@wildlife.ca.gov Jennifer.Giannetta@wildlife.ca.gov			X				4/10/19		4/9/19 7013 0600 0002 1698 0544	4/12/19	

NOTICE OF PREPARATION – DEER CREEK MINE EXPANSION (PMR 19-001)

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	Hard Copy			CD							
	Cover Letter	NOC	NOP	Electronic Submittal Form	NOP	Hand Delivered / Interoffice	E-mail	FedEx	Certified US Mail	Return Receipt	
CA Dept. of Transportation, District 6 1352 W. Olive Ave P.O. Box 12616 Fresno, CA 93778-2616 david.deel@dot.ca.gov michael.navarro@dot.ca.gov			X				4/10/19		4/9/19 7013 0600 0002 1698 0537	4/12/19	
Regional Water Quality Control Board Region 5 – Central Valley Attn: Doug Patteson 1685 E Street Fresno, CA 93706 Doug.Patteson@waterboards.ca.gov			X				4/10/19		4/9/19 7013 0600 0002 1698 0520	4/11/19	
Southern California Edison Attn: Calvin Rossi, Region Manager Local Public Affairs 2425 S. Blackstone St. Tulare, CA 93274 calvin.rossi@sce.com			X				4/10/19		4/9/19 7013 0600 0002 1698 0568	4/12/19	
Southern California Gas Company 404 N. Tipton Street Visalia, CA 93292			X						4/9/19 7013 0600 0002 1698 0575	Per USPS: attempt to deliver 4/12/19 but no access at delivery location	
LOCAL AGENCIES											
Tulare County RMA – Fire						4/9/19					
Tulare County RMA – Flood						4/9/19					
Tulare County RMA – Public Works						4/9/19					

NOTICE OF PREPARATION – DEER CREEK MINE EXPANSION (PMR 19-001)

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	Hard Copy			CD							
	Cover Letter	NOC	NOP	Electronic Submittal Form	NOP	Hand Delivered / Interoffice	E-mail	FedEx	Certified US Mail	Return Receipt	
Tulare County Association of Governments Attn: Ted Smalley, Executive Director 210 N. Church Street, Suite B Visalia, CA 93291						4/9/19					
Tulare County Local Agency Formation Commission 210 N. Church Street, Suite B Visalia, CA 93291						4/9/19					
Tulare County HHSA Environmental Health Department Attn: Allison Shuklian 5957 S. Mooney Blvd Visalia, CA 93277						4/9/19					
Tulare County Office of Emergency Services Attn: Sabrina Bustamonte / David Le 5957 S. Mooney Blvd Visalia, CA 93277						4/9/19					
Tulare County Fire Warden 835 S. Akers Street Visalia, CA 93277						4/9/19					
Tulare County Sheriff Headquarters 2404 W. Burrel Avenue Visalia, CA 93291			X			4/9/19					
Tulare County Agricultural Commissioner 4437 S. Laspina Street Tulare CA 93274			X						4/9/19 7013 0600 0002 1698 0612	4/12/19	

NOTICE OF PREPARATION – DEER CREEK MINE EXPANSION (PMR 19-001)

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	Hard Copy			CD							
	Cover Letter	NOC	NOP	Electronic Submittal Form	NOP	Hand Delivered / Interoffice	E-mail	FedEx	Certified US Mail	Return Receipt	
Tulare County Farm Bureau Attn: Tricia Stever Blattler, Executive Director P.O. Box 748 Visalia, CA 93291			X						4/9/19 7013 0600 0002 1698 0599	4/22/19	
Tulare County Resources Conservation District 3530 W. Orchard Ct Visalia, CA 93277			X						4/9/19 7013 0600 0002 1698 0582	4/12/19	
Tulare County UC Cooperative Extension 4437 S. Laspina Street Tulare, CA 93274			X						4/9/19 7013 0600 0002 1698 0605	4/12/19	
TRIBES											
Kern Valley Indian Council Julie Turner, Secretary P. Box 1010 Lake Isabella, CA 93240			X						4/9/19 7013 0600 0002 1698 0476	4/24/19	
Kern Valley Indian Council Robert Robinson, Co-Chairperson P.O. Box 1010 Lake Isabella, CA 93240			X						4/9/19 7013 0600 0002 1698 0469	4/24/19	

NOTICE OF PREPARATION – DEER CREEK MINE EXPANSION (PMR 19-001)

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	Hard Copy			CD							
	Cover Letter	NOC	NOP	Electronic Submittal Form	NOP	Hand Delivered / Interoffice	E-mail	FedEx	Certified US Mail	Return Receipt	
Santa Rosa Rancheria Tachi Yokut Tribe Rueben Barrios Sr., Chairperson P. O. Box 8 Lemoore, CA 93245			X						4/9/19 7013 0600 0002 1698 0452	4/12/19	
Santa Rosa Rancheria Tachi Yokut Tribe Cultural Department Shana Powers, Director P. O. Box 8 Lemoore, CA 93245			X						4/9/19 7013 0600 0002 1698 0445	4/12/19	
Santa Rosa Rancheria Tachi Yokut Tribe Cultural Department Greg Cuara, Cultural Specialist P. O. Box 8 Lemoore, CA 93245			X						4/9/19 7013 0600 0002 1698 0438	4/12/19	
Torres Martinez Desert Cahuilla Indians Michael Mirelez, Cultural Resource Coordinator P. O. Box 1160 Thermal, CA 92274			X						4/9/19 7013 0600 0002 1698 0421	4/15/19	
Tubatulabals of Kern Valley Robert L. Gomez, Jr., Chairperson P.O. Box 226 Lake Isabella, CA 93240			X						4/9/19 7013 0600 0002 1698 0414	4/16/19	
Tule River Indian Tribe Neil Peyron, Chairperson P. O. Box 589 Porterville, CA 93258			X						4/9/19 7013 0600 0002 1698 0407	4/17/19	

NOTICE OF PREPARATION – DEER CREEK MINE EXPANSION (PMR 19-001)

AGENCY / ENTITY	DOCUMENTS SENT					DELIVERY METHOD					COMMENTS RECEIVED
	Hard Copy			CD							
	Cover Letter	NOC	NOP	Electronic Submittal Form	NOP	Hand Delivered / Interoffice	E-mail	FedEx	Certified US Mail	Return Receipt	
Tule River Indian Tribe Environmental Department Kerri Vera, Director P. O. Box 589 Porterville, CA 93258			X						4/9/19 7013 0600 0002 1698 0391	4/17/19	
Tule River Indian Tribe Department of Environmental Protection Felix Christman, Archaeological Monitor P. O. Box 589 Porterville, CA 93258			X						4/9/19 7013 0600 0002 1698 0384	4/17/19	
Wuksache Indian Tribe/ Eshom Valley Band Kenneth Woodrow, Chairperson 1179 Rock Haven Ct. Salinas, CA 93906			X						4/9/19 7013 0600 0002 1698 0377	4/13/19	
OTHER INTERESTED PARTIES											
Jaxon Enterprises dba Deer Creek Asphalt Attn: Jack Baker, President / Kim Seabourn P.O. Box 994248 Redding, CA 96099-4248 wjbaker@wjbinc.net kenderson@wjbinc.net			X				4/10/19		4/9/19 7013 0600 0002 1698 0360	4/15/19	
Susan Shannon 10772 Road 256 Terra Bella, CA 93270			X						4/9/19 7013 0600 0002 1698 0353	4/16/19	

NOTICE OF PREPARATION – DEER CREEK MINE EXPANSION (PMR 19-001)

AGENCY / ENTITY	DOCUMENTS SENT					DELIVERY METHOD					COMMENTS RECEIVED
	Hard Copy			CD							
	Cover Letter	NOC	NOP	Electronic Submittal Form	NOP	Hand Delivered / Interoffice	E-mail	FedEx	Certified US Mail	Return Receipt	
John Shannon 1952 S. Plano St. Porterville, CA 93257			X						4/9/19 7017 2400 0000 5647 7831	4/19/19	
William Shannon 26147 Avenue 96 Terra Bella, CA 93270			X						4/9/19 7017 2400 0000 5647 7824	4/15/19	
Mitchell Air Quality Consulting Attn: David Mitchell dmitchell@mitchellaq.com 1164 E. Decatur Ave. Fresno, CA 93720			X				4/10/19		4/9/19 7017 2400 0000 5647 7817	4/13/19	
Live Oak Associates Attn: Austin Pearson P.O. Box 2697 Oakhurst, CA 93644 APearson@loainc.com			X				4/10/19		4/9/19 7017 2400 0000 5647 7800	4/12/19	
VRPA Technologies, Inc. Attn: Georgiena Vivian / Jason Ellard 4630 W. Jennifer, Ste. 105 Fresno, CA 93722 gvivian@vrpatechnologies.com jellard@vrpatechnologies.com			X				4/10/19		4/9/19 7013 0600 0002 1698 2494	4/12/19	

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RESOURCE MANAGEMENT AGENCY

5961 SOUTH MOONEY BLVD
VISALIA, CA 93277
PHONE (559) 624-7000
FAX (559) 730-2653

Aaron R. Bock — Economic Development and Planning
Reed Schenke — Public Works
Sherman Dix — Fiscal Services

REED SCHENKE, DIRECTOR

MICHAEL WASHAM, ASSOCIATE DIRECTOR

April 9, 2019

State Clearinghouse
1400 Tenth Street, Room 100
Sacramento, CA 95814

Re: Notice of Preparation (NOP) and Notice of Completion (NOC) Submittals for the Deer Creek Mine Expansion Project (PMR 19-001)

Attn: State Clearinghouse:

Attached are the NOC and 15 copies of the NOP for the above referenced project. Tulare County respectfully requests to have the State Clearinghouse distribute the notices to the agencies denoted with an "X" on the attached NOC Reviewing Agencies Checklist.

The NOP will be made available on the County website on Wednesday, April 10, 2019, at: https://tularecounty.ca.gov/rma/index.cfm/projects/planning-projects/applicant-projects/deer-creek-mine-expansion/

If you have questions or need additional materials, please contact me by phone or email. Thank you for your assistance.

Sincerely,

Hector Guerra
Chief Environmental Planner
(559) 624-7121
hguerra@co.tulare.ca.us

Enclosures: Notice of Completion Form (1)
Notice of Preparation (15)

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: Deer Creek Mine Expansion (PMR 19-001)

Lead Agency: County of Tulare Resource Management Agency
Contact: Hector Guerra, Chief Environmental Planner

Mailing Address: 5961 S. Mooney Blvd.
Phone: 559-624-7121

City: Visalia
Zip: 93277-9394
County: Tulare County

Project Location: County: Tulare
City/Nearest Community: Porterville

Cross Streets: Avenue 120 and Road 272
Zip Code: 93257

Latitude/Longitude: 36 ° 00 ′ 19 ″ N / 118 ° 57 ′ 12 ″ W
Total Acres: +/-20.0

Assessor's Parcel No: 305-190-022 & 305-190-021
Section: 21 Township: 22 S Range: 28E Base: MDBM

Within 2 Miles: State Hwy: ____ Waterways: Deer Creek
Airports: ____ Railways: ____ Schools: ____

Document Type:

CEQA:
- ☒ NOP
- ☐ Early Cons
- ☐ Neg Dec
- ☐ Mit Neg Dec
- ☐ Draft EIR
- ☐ Supplement/Subsequent EIR (Prior SCH No.) ____
- ☐ Other: ____

NEPA:
- ☐ NOI
- ☐ EA
- ☐ Draft EIS
- ☐ FONSI

Other:
- ☐ Joint Document
- ☐ Final Document
- ☐ Other ____

Local Action Type:

- ☐ General Plan Update
- ☐ General Plan Amendment
- ☐ General Plan Element
- ☐ Community Plan
- ☐ Specific Plan
- ☐ Master Plan
- ☐ Planned Unit Dev.
- ☐ Site Plan
- ☐ Rezone
- ☐ Pre-zone
- ☐ Use Permit
- ☐ Land Division (Sub.)
- ☐ Annexation
- ☐ Redevelopment
- ☐ Coastal Permit
- ☒ Other: Mining Permit

Development Type:

- ☐ Residential: Units ____ Acres ____
- ☐ Office: Sq. ft. ____ Acres ____ Employees ____
- ☐ Commercial: Sq. ft. ____ Acres ____ Employees ____
- ☐ Industrial: Sq. ft. ____ Acres ____ Employees ____
- ☐ Educational: ____
- ☐ Recreational: ____
- ☐ Water Facilities: Type ____ MGD ____
- ☐ Transportation: Type ____
- ☒ Mining: Mineral ____
- ☐ Power: Type ____ MW ____
- ☐ Waste Treatment: Type ____ MGD ____
- ☐ Hazardous Waste: Type ____
- ☒ Other: Mining Permit Amendment

Project Issues Discussed in Document:

- ☒ Aesthetic/Visual
- ☒ Agricultural Land
- ☒ Air Quality
- ☒ Archaeological/Historical
- ☒ Biological Resources
- ☐ Coastal Zone
- ☒ Drainage/Absorption
- ☒ Economic/Jobs
- ☐ Fiscal
- ☒ Flood Plain/Flooding
- ☒ Forest Land/Fire Hazard
- ☒ Geologic/Seismic
- ☒ Minerals
- ☒ Noise
- ☒ Population/Housing Balance
- ☒ Public Services/Facilities
- ☒ Recreation/Parks
- ☒ Schools/Universities
- ☒ Septic Systems
- ☒ Sewer Capacity
- ☒ Soil Erosion/Compaction/Grading
- ☒ Solid/Waste
- ☒ Toxic/Hazardous
- ☒ Traffic/Circulation
- ☒ Vegetation
- ☒ Water Quality
- ☒ Water Supply/Groundwater
- ☒ Wetland/Riparian
- ☒ Growth Inducing
- ☒ Land Use
- ☒ Cumulative Effects
- ☒ Other: Tribal Cultural Res.

Present Land Use/Zoning/General Plan Designation:

The surrounding land uses are predominantly foothill grazing (to the north, south and east) and orchards (to the west). / AE-40 (Extensive Agriculture – 40 Acre Minimum) / Agriculture.

Project Description:

See attached page.

Project Description

The Project consists of a ±20-acre expansion to the footprint and operations of the existing and currently operational Deer Creek Mine facility. The Applicant, Deer Creek Rock Co., Inc., currently operates a rock and gravel surface mining operation on 110 acres, as permitted by PMR 01-001, PMR 09-002, and PSP 01-055 (ZA), and PMR 14-002. The permit amendments requested by PMR 19-001 will:

- Allow consistency between PMR 01-001, PMR 09-002, PSP 01-055(ZA), and PMR 14-002;
- Result in an approximately 20-acre expansion through the use of a lot line adjustment toward the east and southeast on land currently used for grazing;
- Increase annual production by 500,000 tons per year (from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year);
- Increase truck hauling by 224 round-trips per day (from a maximum of 376 round-trips per day to a maximum of 600 round-trips per day), with a maximum of 60,000 truck trips per year;
- Result in an increase in the maximum depth of the mine to 300 MSL;
- Result in a change to the estimated total rock production of 40,000,000 tons of rock to 75,000,000 tons of rock material during the estimated 50 years of operation; and
- Result in no change to the approved reclamation plan other than to include the expanded area.

As noted earlier, the current operation is transporting between 600,000 to 900,000 tons of aggregate annually, and the Applicant is requesting to increase its transporting limitation to 1,500,000 tons of aggregate annually. The proposed Project would result in an increase from 42,300 trips per year to a maximum of 60,000 trips per year (i.e., an increase of 17,700 trips per year). This will require approximately three (3) additional employees, resulting in a workforce of approximately 30 employees (20 in first shift and 10 in second shift). The customer base from the proposed Project is anticipated to remain mostly from within Tulare County.

The Applicant is proposing to increase production of the existing mining permit and will include both lateral and depth expansion. All proposed mining activities will take place within the proposed excavation area, as depicted in Figure 1. Proposed operations will continue blasting to break up larger rocks that cannot be moved or broken up by mechanical equipment. All blasting will be conducted by a licensed blaster.

As a condition of the permit, and since the proposed Project is in the AE-40 and AE-10 zone, reclamation of the site will result in the property being reclaimed to grazing/open space standards for eventual agricultural re-use. A current, approved Reclamation Plan is on file with Tulare County.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with an "X." If the document has already been sent to the agency, denote that with an "s."

X	Air Resources Board		Office of Emergency Services
	Boating & Waterways, Department of	X	Office of Historic Preservation
	California Highway Patrol		Office of Public School Construction
X	Caltrans District # 6		Parks & Recreation, Department of
	Caltrans Division of Aeronautics		Pesticide Regulation, Department of
	Caltrans Planning		Public Health, Department of
	Central Valley Flood Protection Board	X	Public Utilities Commission
	Cochella Valley Mtns. Conservancy	X	Regional WQCB # 5F (attn: Doug Patteson)
	Coastal Commission	X	Natural Resources Agency
	Colorado River Board		S.F. Bay Conservation & Development Commission
X	Conservation, Department of		San Gabriel & Lower L.A. Rivers and Mtns Conservancy
	Corrections, Department of		San Joaquin River Conservancy
	Delta Protection Commission		Santa Monica Mountains Conservancy
	Education, Department of		State Lands Commission
	Energy Commission		SWRCB: Clean Water Grants
X	Fish & Wildlife Region # 4	X	SWRCB: Water Quality
X	Food & Agriculture, Department of		SWRCB: Water Rights
X	Forestry & Fire Protection, Department of		Tahoe Regional Planning Agency
X	General Services, Department of	X	Toxic Substances Control, Department of
	Health Care Services, Department of		Water Resources, Department of
	Housing & Community Development	X	Other: Recycling and Recovery (Cal Recycle)
	Integrated Waste Management Board	S	Other: San Joaquin Valley Air Pollution Control District
X	Native American Heritage Commission	S	Other: Tulare County RMA Fire
S	Other: Naval Facilities Engineering Command	S	Other: Tulare County Fire Warden
S	Other: U.S. Department of Agriculture - NRCS	S	Other: Tulare County HHSA – Environmental Health
S	Other: U.S. Army Corps of Engineers	S	Other: Tulare County Local Agency Formation Commission
S	Other: U.S. Fish and Wildlife Service	S	Other: Tulare County Office of Emergency Services
S	Other: CA Dept of Fish and Wildlife Region 4	S	Other: Tulare County Resources Conservation District
S	Other: CA Dept of Transportation, District 6	S	Other: Tulare County Sheriff's Office
S	Other: Regional Water Quality Control Board Region 5F	S	Other: Tulare County U.C. Cooperative Extension
S	Other: Tulare County Association of Governments	S	Other: Tulare County RMA Flood
S	Other: Tulare County Farm Bureau	S	Other: Tulare County RMA Public Works

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Local Public Review Period (to be filled in by lead agency)

Starting Date: April 10, 2019 Ending Date: May 10, 2019

Lead Agency (Complete if applicable):

Consulting Firm:
Address:
City/State/Zip:
Contact:
Phone:

Applicant: Deer Creek Rock Co., Inc.
Address: P.O. Box 994248
City/State/Zip: Redding, CA 96099-4248
Phone: (530) 241-2112

Signature of Lead Agency Representative: Date: 4/9/19
Hector Guerra, Chief Environmental Planner

Signature of Lead Agency Representative: Date: 4.9.19
Reed Schenke, Director/Environmental Assessment Officer

Authority cited: Section 21083, public Resources Code. Reference: Section 21161, Public Resources Code.

PMR 19-001NOTICE OF PREPARATION

To:	State Clearinghouse	From:	County of Tulare – RMA
	PO Box 3044/ 1400 Tenth St		5961 S Mooney Blvd
	Sacramento, CA 95814		Visalia CA 93277

Date: April 10, 2019

Subject: Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) and Scoping Meeting

Project Title: Deer Creek Mine Expansion (PMR 19-001)

Project Applicant: County of Tulare

Project Location: 27671 Avenue 120 / Road 272, Porterville, CA 93257. The site is approximately 0.84 miles east of Road 272 and abutting Avenue 120 along a portion of its northeastern side
APN(s): 305-190-022 and 305-190-021
USGS 7.5 Minute Quadrangle: Success Dam
Section/Township/ Range: S. 21 / T. 22 S / R. 28E, MDB&M

Tulare County Resource Management Agency (RMA) will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit(s) or other approval(s) for the project. In addition, please provide us with contact information of the person(s) in your agency that we may contact during the CEQA process.

The project description, location, and the potential environmental effects are contained in the attached materials.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

A scoping meeting is scheduled for **Thursday, May 2, 2019, at 1:30 p.m.** in the **Main Conference Room** of the Tulare County Resource Management Agency at the address shown above. **Please sign in at the Security Desk in the Government Plaza main lobby.**

Please direct your response to Hector Guerra, Chief Environmental Planner at the address shown above. He may be contacted by e-mail at hguerra@co.tulare.ca.us or by telephone at 559-624-7121.

Signature: _____ Date: 4/9/19
Hector Guerra
Title: Chief Environmental Planner

Signature: _____ Date: 4.9.19
Reed Schenke, P.E.
Title: RMA Director / Environmental Assessment Officer

Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375

PROJECT DESCRIPTION: The full Project description, location, and identification of potential environmental effects are contained in the attached materials. In accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), the County of Tulare Resource Management Agency (RMA) will be preparing an Environmental Impact Report (EIR) to evaluate the environmental effects associated with the proposed ±20-acre expansion to the footprint and operations of the existing Deer Creek Mine facility.

Figures included in this Notice:

Figure 1 – Vicinity Map (Aerial)
Figure 2 – Project Site (Boundaries and Ownership)
Figure 3 – Project Location
Figure 4 – Conceptual Site Plan

Potential Approvals Required:

The following agencies may have jurisdiction/interests concerning the proposed Project:

California Air Resources Board
California Department of Conservation
California Department of Fish and Wildlife, Region 4
California Department of Food and Agriculture
California Department of Forestry & Fire Protection
California Department of General Services
California Department of Resources and Recycling and Recovery (Cal Recycle)
California Department of Transportation (Caltrans)
California Department of Toxic Substances Control
California Natural Resources Agency
Native American Heritage Commission
Office of Historic Preservation
Public Utilities Commission
Regional Water Quality Control Board, Region 5F
State Water Resources Control Board, Water Quality
San Joaquin Valley Unified Air Pollution Control District
Tulare County Health and Human Services Agency (Environmental Health)
Tulare County Resource Management Agency (Fire, Flood, Planning)
United States Army Corps of Engineers
United States Fish and Wildlife Service

The following interested persons/parties are also included in this notification:

Jack Baker, Jaxon Enterprises dba Deer Creek Asphalt
Susan Shannon
John Shannon
William Shannon
Mitchell Air Quality Consulting
Live Oak Associates
VRPA Technologies

If you require additional information related to this notice, please contact:

Hector Guerra, Chief Environmental Planner at:
E-mail: hguerra@co.tulare.ca.us or Phone: (559) 624-7121

Figure 1 – Vicinity Map (Aerial)

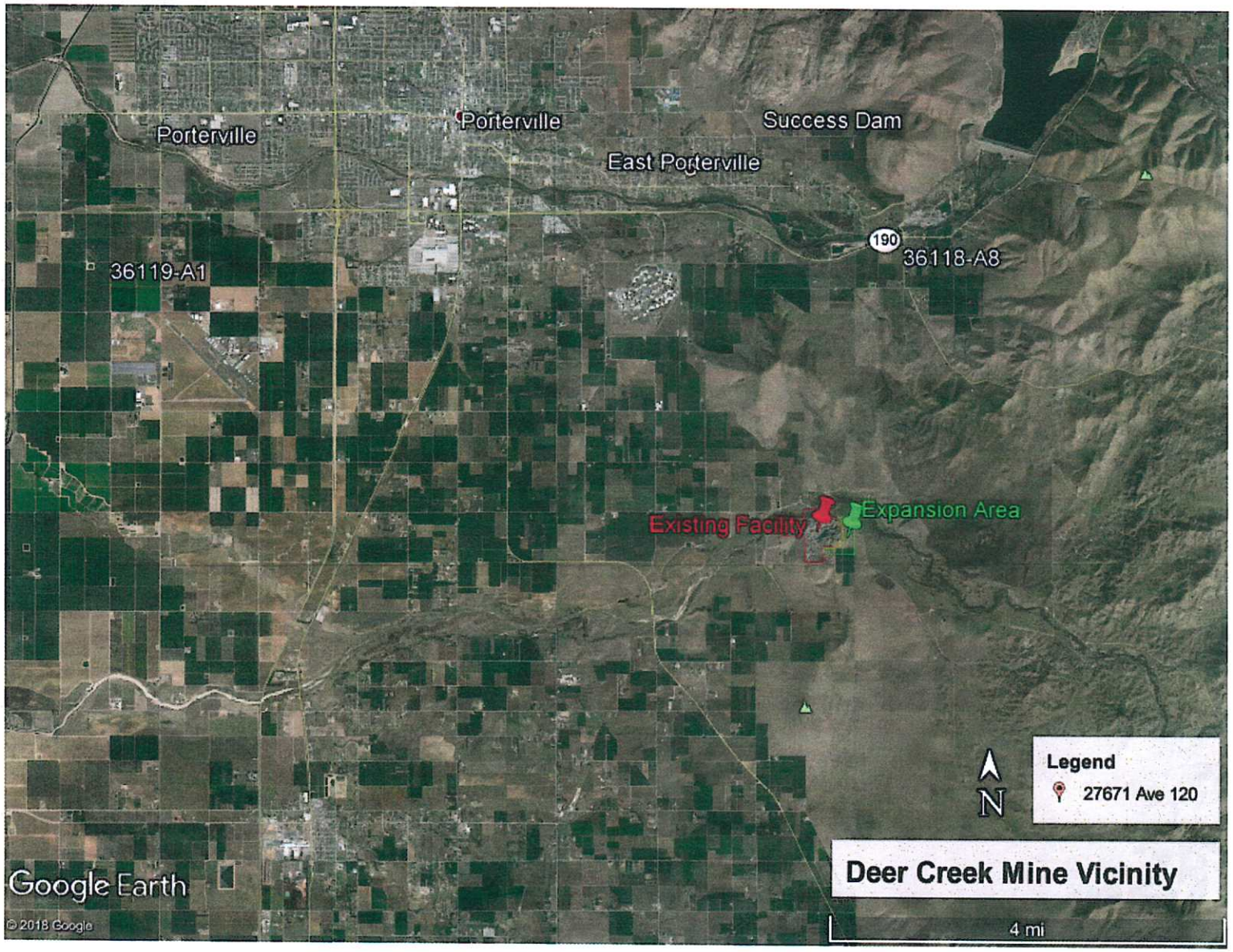


Figure 2 – Project Site (Boundaries and Ownership)

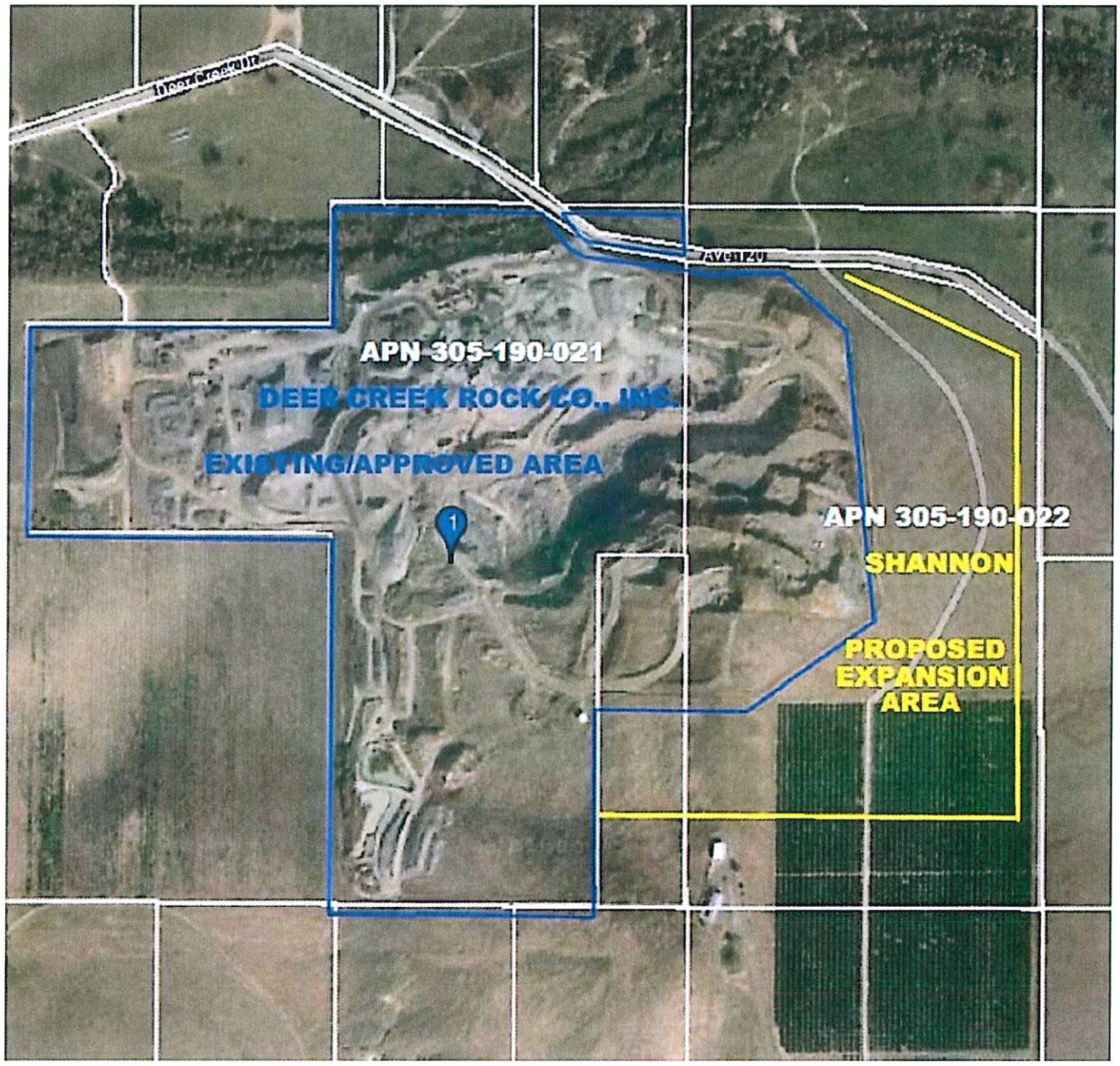


Figure 3 – Project Location

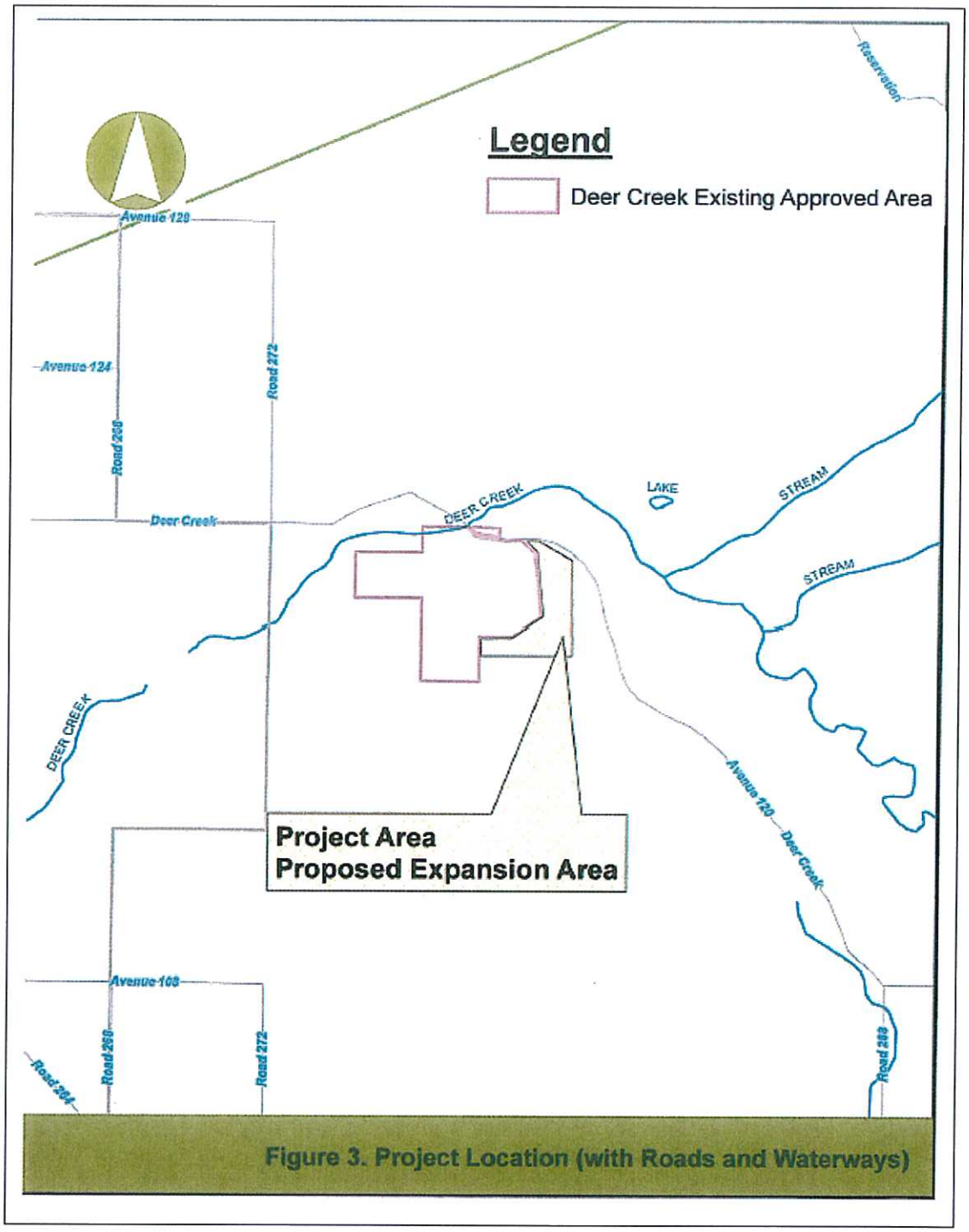
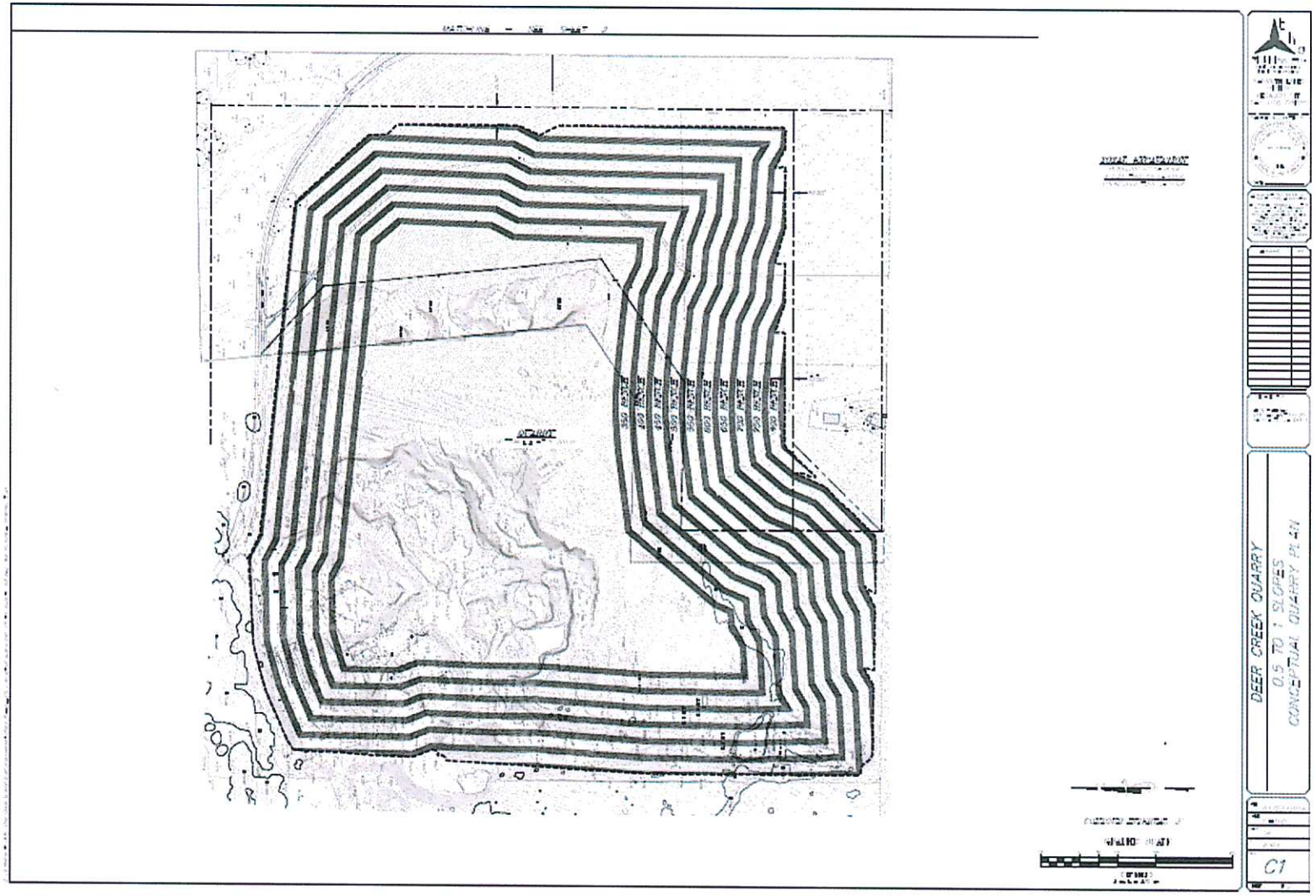


Figure 4 – Conceptual Site Plan



PROJECT LOCATION AND SETTING

The Project site is located entirely within an unincorporated area of Tulare County and would result in an approximately ±20-acre expansion of the existing mining facility. The Project site is located at 27671 Avenue 120, Porterville, CA 93257. The site is located south of Deer Creek Drive, approximately 1/3 mile east of Avenue 120 and Road 272, and includes Assessor Parcel Numbers (APN) 305-190-022 and 305-190-021. The site is in Section 21, Township 22 South, Range 28 East, MDB&M, and can be found within the Success Dam United States Geological Survey (USGS) 7.5 minute topographic quadrangle. The site is in the low foothills of the Central Sierra Nevada on the eastern edge of the Tulare basin, where elevations range from 560–885 feet National Geodetic Vertical Datum (NGVD). The coordinates of the Project site are - Latitude: N 36° 00' 19", Longitude: W 118° 57' 12".

The surrounding land uses are predominantly foothill grazing (to the north, south and east) and orchards (to the west). There are single-family rural residences located on Deer Creek Drive at Road 272. However, there are no schools, airports, or scenic roads within a two mile radius of the project site. The site is zoned AE-40 (Exclusive Agriculture – 40 acre minimum). Natural resources mining is permitted with a surface mining permit and reclamation plan, in accordance with Chapter 25 of Part VII of the Tulare County Ordinance Code. A portion of the Project site currently supports agricultural grazing, and the disturbed Project site areas are proposed to be reclaimed for grazing and agriculture uses in the future, pursuant to the Reclamation Plan. The Project site's land use designation is "Foothill Agriculture". The site is located outside of an Urban Boundary and is subject to the policies of the Foothill Growth Management Plan (FGMP).

Access to the Project site will be from Avenue 120/Deer Creek Drive. Vehicles exiting the facility are expected to travel on Road 264 and then north to Avenue 116/Road 252 or south to Road 264/M-109. The nearest state highway that provide direct regional access to the proposed Project site is State Route 65 (located approximately 4.5 miles west of the site), but does not have direct access/connectivity to Avenue 116.

DESCRIPTION OF PROPOSED FACILITIES

As indicated earlier, the proposed Project consists of a ±20-acre expansion to the footprint and operations of the existing and currently operational Deer Creek Mine facility. The Applicant, Deer Creek Rock Co., Inc., currently operates a rock and gravel surface mining operation on 110 acres, as permitted by PMR 01-001, PMR 09-002, and PSP 01-055 (ZA), and PMR 14-002. The permit amendments requested by PMR 19-001 will:

- Allow consistency between PMR 01-001, PMR 09-002, PSP 01-055(ZA), and PMR 14-002;
- Result in an approximately 20-acre expansion through the use of a lot line adjustment toward the east and southeast on land currently used for grazing;
- Increase annual production by 500,000 tons per year (from a maximum of 1,000,000 tons per year to a maximum of 1,500,000 tons per year);
- Increase truck hauling by 224 round-trips per day (from a maximum of 376 round-trips per day to a maximum of 600 round-trips per day), with a maximum of 60,000 truck trips per year;

- Result in an increase in the maximum depth of the mine to 300 MSL;
- Result in a change to the estimated total rock production of 40,000,000 tons of rock to 75,000,000 tons of rock material during the estimated 50 years of operation; and
- Result in no change to the approved reclamation plan other than to include the expanded area.

As noted earlier, the current operation is transporting between 600,000 to 900,000 tons of aggregate annually, and the Applicant is requesting to increase its transporting limitation to 1,500,000 tons of aggregate annually. The proposed Project would result in an increase from 42,300 trips per year to a maximum of 60,000 trips per year (i.e., an increase of 17,700 trips per year). This will require approximately three (3) additional employees, resulting in a workforce of approximately 30 employees (20 in first shift and 10 in second shift). The customer base from the proposed Project is anticipated to remain mostly from within Tulare County.

The Applicant is proposing to increase production of the existing mining permit and will include both lateral and depth expansion. All proposed mining activities will take place within the proposed excavation area, as depicted in Figure 1. Proposed operations will continue blasting to break up larger rocks that cannot be moved or broken up by mechanical equipment. All blasting will be conducted by a licensed blaster.

As a condition of the permit, and since the proposed Project is in the AE-40 and AE-10 zone, reclamation of the site will result in the property being reclaimed to grazing/open space standards for eventual agricultural re-use. A current, approved Reclamation Plan is on file with Tulare County.

POTENTIAL ENVIRONMENTAL EFFECTS

The EIR will evaluate, among other things, the probable direct and cumulative environmental impacts associated with expansion and operation of the Deer Creek Mine Expansion Project as described below. Mitigation measures will be recommended, where feasible, to mitigate potentially significant impacts. The proposed Project will be evaluated on its own merits, resource specific facts, and determinations; therefore, a project specific environmental document will be prepared. The following issues are proposed for analysis in the EIR:

Aesthetics

The Project is located in a remote, rural area. To reduce visual impacts from passers-by and nearby residences, the existing facility has an existing 8-foot berm along the entire edge of the facility site. This Project will be evaluated to determine the need to require and maintain an 8-foot berm along the edge of the expanded site boundary. Project site lighting would not likely have the potential to cause lighting and glare impacts as it is in a rural area and no new structures are associated with proposed Project. The EIR will provide an assessment of Project impacts to visual resources, as well as lighting and glare impacts.

Agriculture and Forestry Resources

The proposed ±20-acre expansion area is predominantly identified as "Grazing Land" (±18 acres) with a small area (±2 acres) in the southern portion of the site identified at "Unique Farmland", which is currently in agricultural production that supports the growth of an orchard. The Project site is not located in an Agricultural Preserve and is not subject to the Williamson Act. A reclamation plan for the existing operation/facility has been approved by the California Department of Conservation, and conditioned by Tulare County permits PMR 01-001, PMR 09-002, and PMR 14-002, which requires the applicant to reclaim the disturbed Project areas for grazing and agriculture uses. Therefore, the proposed Project's direct and indirect impacts on agricultural resources will be analyzed in the EIR.

Air Quality

The EIR will describe regional and local air quality in the vicinity of the proposed Project site and will evaluate impacts to air quality associated with Project operations. It is anticipated that the air quality impacts from this Project will primarily come from dust due to mining-related activities, and the exhaust emissions (in the form of diesel particulate matter) from the mine's mobile and operational equipment, and heavy-duty haul trucks. Criteria pollutants and toxic air contaminants will be analyzed as part of an air quality impact study which will be prepared and included as part of the Project DEIR. The proposed Project's estimated air emissions will be compared to emissions thresholds of the San Joaquin Valley Unified Air Pollution Control District.

Biological Resources

The Project site is surrounded by surface mine, grazing land, and rural residential homes that have resulted in significant land disturbances. A biological evaluation of the existing facility was completed on August 2014 and concluded that there are 35 special status species (11 plant species and 24 animal species) known to occur in the general area. A biological assessment will be prepared and included as part of the Project DEIR. As such, the proposed Project's potential to affect biological resources will be analyzed in the EIR.

Cultural Resources

There are no visibly identifiable or recognizable cultural resources within the proposed Project expansion areas. The Project site is adjacent to an existing surface mining operation. A cultural resources assessment of the existing facility was conducted in September 2014 and determined that impacts to historical, archaeological, paleontological, human remains, and architectural resources was considered to be less than significant. Although the 2014 assessment found that no cultural/archaeological resources were discovered on the existing facility site or within a one-half mile radius, it is possible that cultural/archaeological resources could be discovered as new excavations occur on the expanded areas. As such, a cultural assessment of the proposed Project site will be prepared and included as part of the Project DEIR. Therefore, this EIR will include an analysis of the proposed Project's potential to affect cultural resources.

Geology/Soils and Mineral Resources

The Project site is located on solid rock formation and the Project includes the expansion of an existing mining operation. The proposed expansion will allow the facility an annual 500,000 ton increase in production (from 1,000,000 tons to 1,500,000 tons). Although topsoil will be removed from the Project site during the mining operation, the Project includes a Reclamation Plan that will allow for open space/grazing. A cultural study will be prepared to evaluate the potential for paleontological resources to be located within the Project site. As such, the EIR will include an analysis on the Project's potential to result in impacts on geology, soils, and mineral resources.

Greenhouse Gas Emissions

Implementation of the proposed expansion Project would result in impacts from project-related greenhouse gases (GHGs). The Project involves an increase in mining operations and excavated materials that will be processed within the mining facility's areas of operations. The EIR will include a discussion of greenhouse gas emissions and the proposed Project's contribution to potential cumulative impacts on global climate. The proposed Project's estimated greenhouse gas emissions will be evaluated for consistency with the Tulare County 2030 General Plan, the Tulare County Climate Action Plan, and the State's Scoping Plan. A GHG study will be prepared and included as part of the Project EIR.

Energy

The EIR will include an analysis on the Project's potential to result in impacts on energy conservations and/or consumption.

Hazards and Hazardous Materials

Existing mining operations include storage of diesel fuel for mining equipment and lubricating and maintenance oils typical of mining/rock crushing operations. The operation of mining equipment could result in accidental spillage of gasoline, diesel, hydraulic, transmission or break fluids, and oil during normal, daily operations. The existing facility is required to have a Hazardous Materials Business Plan from the Tulare County Environmental Health Services Department. As such, the EIR will evaluate the potential for the proposed Project to result in, or be affected by, impacts associated with hazards and hazardous materials.

Hydrology/Water Quality

The proposed Project is an expansion of existing operations to an area east-southeast. Operations in the Project site will be identical to the existing operations with the only difference being an increase in activities resulting from the increase in throughput of the mine and heavy-duty truck trips. Water supply will come from the existing on-site wells and water used in operations will be recycled. There is an existing septic system within the existing facility and the proposed operations do not include new or expansion of water or wastewater treatment facilities. The Project will be required to comply with all applicable Regional Water Quality Control Board regulations, including Storm Water Pollution Prevention Plan (SWPPP), Storm Water

Monitoring Plan (SWMP), and Title 27 requirements. FEMA FIRM maps indicate that the proposed Project area is outside of the 100-year Flood Zone. The EIR will analyze the proposed Project's effect on the hydrology, water quality, and water supply resources.

Land Use/Planning

The existing facility and proposed expansion area do not conflict with the Tulare County General Plan designations or zoning classifications. The proposed Project site is not located within any Urban Development Boundary or Urban Area Boundary. The EIR will evaluate the proposed Project's potential effects on existing and planned land uses.

Noise

The Project involves an expansion of the current mining area, an increase in mining operations, and an increase in excavated materials that will be processed within the mining facility's areas of operations. Additional noise will likely occur as a result of the expanded operations. The nearest residence to the proposed expanded mining area is located approximately ±450 feet south of the Project site; as such, the analysis will evaluate noise impacts and the need for noise reduction measures. A noise study report will be prepared and included as part of the Project DEIR. As such, the EIR will evaluate the potential effects from the proposed expansion of mining-related operations.

Population/Housing

Although unlikely due to the nature of the proposed Project, the EIR will evaluate the Project's effect on population and housing in the local area based on estimations of Project employment and distribution of the employees by place of residence.

Public Services

Although unlikely due to the nature of the proposed Project, the EIR will evaluate the Project's potential to create an adverse impact on local fire and police protection services, parks, and schools.

Recreation

Although unlikely due to the nature of the proposed Project, the increase in use of parks and other recreational facilities near the vicinity of the Project will be analyzed in the EIR.

Transportation/Traffic

The Project site has access to County maintained Deer Creek Road through a private access road on the mining site. The Project expansion will increase the maximum daily truck hauling trips from 376 round trips to 600 round trips (an increase of 224 daily round trips). A traffic impact study will be prepared to evaluate potential impacts on existing roadways resulting from Project-related increases in traffic volume and will included as part of the Project DEIR.

Tribal Cultural Resources

A Sacred Land File (SLF) Search request will be submitted to the Native American Heritage Commission (NAHC) and any tribes listed by the NAHC will receive consultation notices pursuant to the requirements of AB 52. A cultural resources evaluation will be prepared for this Project. The EIR will examine the proposed Project's potential to affect Tribal cultural resources.

Utilities/Service Systems

The Project involves an increase in mining operations and excavated materials that will be processed at the adjacent mining facility. As such, the proposed Project will not require extension/connection to urban services such as potable water service, wastewater treatment, and stormwater drainage. However, the EIR will analyze drainage, water, wastewater, natural gas, and electrical systems and the proposed Project's impact on these systems.

Wildfire

The proposed Project is located within a State Responsibility Area (SRA). As such, the EIR will include an analysis on the Project's potential impacts related to wildfires.

GROWTH INDUCEMENT

The proposed Project will not likely result in the potential for growth inducement resulting from expansion of the existing mine. Regardless of likelihood or unlikelihood, the EIR will include an analysis on employment and economic activity.

CUMULATIVE IMPACTS

The EIR will discuss the incremental contribution of the proposed Project to cumulative effects of other past, current, and planned and reasonably foreseeable Projects in the vicinity.

ALTERNATIVES EVALUATED IN THE EIR

In accordance with the CEQA Guidelines Section 15126.6, the EIR will describe a reasonable range of alternatives to the proposed Project that are capable of meeting most of the proposed Project's objectives, but would avoid or substantially lessen any of the significant effects of the proposed Project. The EIR will also identify any alternatives that were considered but rejected by the Lead Agency as infeasible and briefly explain the reasons why. The EIR will also provide an analysis of the No Project Alternative.

OPPORTUNITY FOR PUBLIC COMMENT

Interested individuals, groups, and agencies may provide to the County of Tulare Resource Management Agency, Economic Development and Planning Branch, written comments on topics to be addressed in the EIR for the proposed Project. Because of time limits mandated by state law, comments will be accepted until ***5:00 p.m. Thursday, May 2, 2019***. Agencies that will need

to use the EIR when considering permits or other approvals for the proposed Project should provide the name of a staff contact person. Please send all comments to:

Hector Guerra, Chief Environmental Planner
Tulare County Resource Management Agency
Economic Development and Planning Branch
5961 South Mooney Boulevard
Visalia, CA 93277-9394
E-mail at: HGuerra@co.tulare.ca.us;
Facsimile☹559) 730-2653
Phone: (559) 624-7121

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COMMENTS RECEIVED

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STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Gavin Newsom
Governor

Kate Gordon
Director

Notice of Preparation

Tulare County
Resource Management Agency

APR 15 2019

REC'D

April 10, 2019

To: Reviewing Agencies

Re: Deer Creek Mine Expansion (PMR 19-001)
SCH# 2019049052

Attached for your review and comment is the Notice of Preparation (NOP) for the Deer Creek Mine Expansion (PMR 19-001) draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Hector Guerra
Tulare County
5961 S. Mooney Blvd.
Visalia, CA 93277-9394

with a copy to the State Clearinghouse in the Office of Planning and Research at state.clearinghouse@opr.ca.gov . Please refer to the SCH number noted above in all correspondence concerning this project on our website: https://ceqanet.opr.ca.gov/2019049052/2 .

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

cc: Lead Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL 1-916-445-0613 state.clearinghouse@opr.ca.gov www.opr.ca.gov

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # 2019049052

Project Title: Deer Creek Mine Expansion (PMR 19-001)

Lead Agency: County of Tulare Resource Management Agency
Contact: Hector Guerra, Chief Environmental Planner

Mailing Address: 5961 S. Mooney Blvd.
Phone: 559-624-7121

City: Visalia
Zip: 93277-9394
County: Tulare County

Project Location: County: Tulare
City/Nearest Community: Porterville

Cross Streets: Avenue 120 and Road 272
Zip Code: 93257

Latitude/Longitude: 36 ° 00 ' 19 " N / 118 ° 57 ' 12 " W
Total Acres: +/-20.0

Assessor's Parcel No: 305-190-022 & 305-190-021
Section: 21 Township: 22 S Range: 28E Base: MDBM

Within 2 Miles: State Hwy: _____ Waterways: Deer Creek

Airports: _____ Railways: _____ Schools: _____

Document Type:

CEQA:
- ☒ NOP
- ☐ Early Cons
- ☐ Neg Dec
- ☐ Mit Neg Dec
- ☐ Draft EIR
- ☐ Supplement/Subsequent EIR (Prior SCH No.) _____
- ☐ Other: _____

NEPA:
- ☐ NOI
- ☐ EA
- ☐ Draft EIS
- ☐ FONSI

Other:
- ☐ Joint Document
- ☐ Final Document
- ☐ Other _____

Governor's Office of Planning & Research

APR 10 2019

STATE CLEARINGHOUSE

Local Action Type:

- ☐ General Plan Update
- ☐ General Plan Amendment
- ☐ General Plan Element
- ☐ Community Plan
- ☐ Specific Plan
- ☐ Master Plan
- ☐ Planned Unit Dev.
- ☐ Site Plan
- ☐ Rezone
- ☐ Prezone
- ☐ Use Permit
- ☐ Land Division (Sub.)
- ☐ Annexation
- ☐ Redevelopment
- ☐ Coastal Permit
- ☒ Other: Mining Permit

Development Type:

- ☐ Residential: Units _____ Acres _____
- ☐ Office: Sq. ft. _____ Acres _____ Employees _____
- ☐ Commercial: Sq. ft. _____ Acres _____ Employees _____
- ☐ Industrial: Sq. ft. _____ Acres _____ Employees _____
- ☐ Educational: _____
- ☐ Recreational: _____
- ☐ Water Facilities: Type _____ MGD _____
- ☐ Transportation: Type _____
- ☒ Mining: Mineral _____
- ☐ Power: Type _____ MW _____
- ☐ Waste Treatment: Type _____ MGD _____
- ☐ Hazardous Waste: Type _____
- ☒ Other: Mining Permit Amendment

Project Issues Discussed in Document:

- ☒ Aesthetic/Visual
- ☒ Agricultural Land
- ☒ Air Quality
- ☒ Archaeological/Historical
- ☒ Biological Resources
- ☐ Coastal Zone
- ☒ Drainage/Absorption
- ☒ Economic/Jobs
- ☐ Fiscal
- ☒ Flood Plain/Flooding
- ☒ Forest Land/Fire Hazard
- ☒ Geologic/Seismic
- ☒ Minerals
- ☒ Noise
- ☒ Population/Housing Balance
- ☒ Public Services/Facilities
- ☒ Recreation/Parks
- ☒ Schools/Universities
- ☒ Septic Systems
- ☒ Sewer Capacity
- ☒ Soil Erosion/Compaction/Grading
- ☒ Solid/Waste
- ☒ Toxic/Hazardous
- ☒ Traffic/Circulation
- ☒ Vegetation
- ☒ Water Quality
- ☒ Water Supply/Groundwater
- ☒ Wetland/Riparian
- ☒ Growth Inducing
- ☒ Land Use
- ☒ Cumulative Effects
- ☒ Other: Tribal Cultural Res.

Present Land Use/Zoning/General Plan Designation:

The surrounding land uses are predominantly foothill grazing (to the north, south and east) and orchards (to the west). / AE-40 (Extensive Agriculture – 40 Acre Minimum) / Agriculture.

Project Description:

See attached page.

NOP Distribution List

County: Tulare OK

SCH# 2019049052

esources Agency

- [x] **Resources Agency**
  Nadell Gayou
- [ ] **Dept. of Boating & Waterways**
  Denise Peterson
- [ ] **California Coastal Commission**
  Allyson Hitt
- [ ] **Colorado River Board**
  Elsa Contreras
- [x] **Dept. of Conservation**
  Crina Chan
- [x] **Cal Fire**
  Dan Foster
- [x] **Central Valley Flood Protection Board**
  James Herota
- [x] **Office of Historic Preservation**
  Ron Parsons
- [x] **Dept of Parks & Recreation**
  Environmental Stewardship Section
- [ ] **S.F. Bay Conservation & Dev't. Comm.**
  Steve Goldbeck
- [x] **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou

Fish and Game

- [ ] **Depart. of Fish & Wildlife**
  Scott Flint
  Environmental Services Division
- [ ] **Fish & Wildlife Region 1**
  Curt Babcock
- [ ] **Fish & Wildlife Region 1E**
  Laurie Harnsberger
- [ ] **Fish & Wildlife Region 2**
  Jeff Drongesen
- [ ] **Fish & Wildlife Region 3**
  Craig Weightman
- [x] **Fish & Wildlife Region 4**
  Julie Vance
- [ ] **Fish & Wildlife Region 5**
  Leslie Newton-Reed
  Habitat Conservation Program
- [ ] **Fish & Wildlife Region 6**
  Tiffany Ellis
  Habitat Conservation Program
- [ ] **Fish & Wildlife Region 6 I/M**
  Heidi Calvert
  Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Wildlife M**
  William Paznokas
  Marine Region

Other Departments

- [ ] **California Department of Education**
  Lesley Taylor
- [x] **OES (Office of Emergency Services)**
  Monique Wilber
- [x] **Food & Agriculture**
  Sandra Schubert
  Dept. of Food and Agriculture
- [ ] **Dept. of General Services**
  Cathy Buck
  Environmental Services Section
- [ ] **Housing & Comm. Dev.**
  CEQA Coordinator
  Housing Policy Division

Independent Commissions,Boards

- [ ] **Delta Protection Commission**
  Erik Vink
- [ ] **Delta Stewardship Council**
  Anthony Navasero
- [ ] **California Energy Commission**
  Eric Knight
- [x] **Native American Heritage Comm.**
  Debbie Treadway
- [x] **Public Utilities Commission**
  Supervisor
- [ ] **Santa Monica Bay Restoration**
  Guangyu Wang
- [ ] **State Lands Commission**
  Jennifer Deleong
- [ ] **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Cal State Transportation Agency CalSTA

- [ ] **Caltrans - Division of Aeronautics**
  Philip Crimmins
- [ ] **Caltrans – Planning HQ LD-IGR**
  Christian Bushong
- [ ] **California Highway Patrol**
  Suzann Ikeuchi
  Office of Special Projects

Dept. of Transportation

- [ ] **Caltrans, District 1**
  Rex Jackman
- [ ] **Caltrans, District 2**
  Marcelino Gonzalez
- [ ] **Caltrans, District 3**
  Susan Zanchi
- [ ] **Caltrans, District 4**
  Patricia Maurice
- [ ] **Caltrans, District 5**
  Larry Newland
- [x] **Caltrans, District 6**
  Michael Navarro
- [ ] **Caltrans, District 7**
  Dianna Watson
- [ ] **Caltrans, District 8**
  Mark Roberts
- [ ] **Caltrans, District 9**
  Gayle Rosander
- [ ] **Caltrans, District 10**
  Tom Dumas
- [ ] **Caltrans, District 11**
  Jacob Armstrong
- [ ] **Caltrans, District 12**
  Maureen El Harake

Cal EPA

Air Resources Board

- [ ] **Airport & Freight**
  Jack Wursten
  - [ ] **Transportation Projects**
    Nesamani Kalandiyur
  - [x] **Industrial/Energy Projects**
    Mike Tollstrup
- [x] **California Department of Resources, Recycling & Recovery**
  Kevin Taylor/Jeff Esquivel
- [ ] **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- [ ] **State Water Resources Control Board**
  Cindy Forbes – Asst Deputy
  Division of Drinking Water
- [ ] **State Water Resources Control Board**
  Div. Drinking Water #_____
- [x] **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [ ] **State Water Resouces Control Board**
  Phil Crader
  Division of Water Rights
- [x] **Dept. of Toxic Substances Control Reg. #_____**
  CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [ ] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [ ] **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] **RWQCB 5S**
  Central Valley Region (5)
  - [x] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [ ] **RWQCB 7**
  Colorado River Basin Region (7)
- [ ] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)

- [ ] **Other** _____
  _____
  _____
- [ ] _____
  Conservancy

Last Updated 5/22/18

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NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691 Phone (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

Tulare County
Resource Management Agency
APR 18 2019
REC'D

April 16, 2019

Hector Guerra
Tulare County
5961 S. Mooney Blvd.
Visalia, CA 93277-9394

RE: SCH# 2019049052 Deer Creek Mine Expansion (PMR 19-001), Tulare County

Dear Mr. Guerra:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides 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). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
    a. A brief description of the project.
    b. The lead agency contact information.
    c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
    d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
    a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
    a. Alternatives to the project.
    b. Recommended mitigation measures.
    c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
    a. Type of environmental review necessary.
    b. Significance of the tribal cultural resources.
    c. Significance of the project's impacts on tribal cultural resources.
    d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
    a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
    b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
    a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
    b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        i. Planning and construction to avoid the resources and protect the cultural and natural context.
        ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
        i. Protecting the cultural character and integrity of the resource.
        ii. Protecting the traditional use of the resource.
        iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
    a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
    b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
    a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
    b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
    c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Katy.Sanchez@nahc.ca.gov.

Sincerely,

Nancy Sanchez

for

Katy Sanchez
Associate Environmental Planner

cc: State Clearinghouse

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San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

APR 30 2019

Tulare County
Resource Management Agency
MAY 07 2019
REC'D

Hector Guerra
Tulare County
Resource Management Agency
5961 South Mooney Blvd.
Visalia, CA 93277-9394

Project: Notice of Preparation of a Draft Environmental Impact Report for the Deer Creek Mine Expansion (PMR 19-001)

District CEQA Reference No: 20190426

Dear Mr. Guerra:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the Deer Creek Mine Expansion. The proposed project consists of a 20-acre expansion to the footprint and operations of the existing and currently operational Deer Creek Mine facility (Project). The proposed expansion would result in an increase of annual production by 500,000 tons per year, an increase in truck hauling by 224 round-trips per day, an increase in the maximum depth of the mine to 300 MSL, and a change to the estimated total rock production of 40 million tons to 75 million tons during the estimated 50 years of operations. The Project is located at 27671 Avenue 120 (APN# 305-190-022 and 305-190-021), Porterville, CA. The District offers the following comments:

Emissions Analysis

1) At the federal level for the National Ambient Air Quality Standards (NAAQS), the District is currently designated as extreme nonattainment for the 8-hour ozone standards; nonattainment for the PM2.5 standards; and attainment for the 1-Hour ozone, PM10 and CO standards. At the state level, the District is currently designated as nonattainment for the 8-hour ozone, PM10, and PM2.5 California Ambient Air Quality Standards (CAAQS). The District recommends that the Air Quality section of the Environmental Impact Report (EIR) include a discussion of the following impacts:

Samir Sheikh
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

www.valleyair.org www.healthyairliving.com

Printed on recycled paper.

a) **Criteria Pollutants:** Project related criteria pollutant emissions should be identified and quantified. The discussion should include existing and post-project emissions.

i) Construction Emissions: Construction emissions are short-term emissions and should be evaluated separately from operational emissions. For reference, the District's annual criteria thresholds of significance for construction are: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (SOx), 15 tons per year of particulate matter of 10 microns or less in size (PM10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5).

- *Recommended Mitigation Measure if needed:* To reduce impacts from construction related exhaust emissions, the District recommends feasible mitigation for the project to utilize off-road construction fleets that can achieve fleet average emissions equal to or cleaner than the Tier III emission standards, as set forth in §2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 Code of Federal Regulations. This can be achieved through any combination of uncontrolled engines and engines complying with Tier III and above engine standards.

ii) Operational Emissions: Permitted (stationary sources) and non-permitted (mobile sources) sources should be analyzed separately. For reference, the annual criteria thresholds of significance for operation of permitted and non-permitted sources each are: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (SOx), 15 tons per year of particulate matter of 10 microns or less in size (PM10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5).

- *Recommended Mitigation Measure if needed:* Project related impacts on air quality can be reduced through incorporation of design elements, for example, that increase energy efficiency, reduce vehicle miles traveled, and reduce construction exhaust related emissions.

iii) Recommended Model: Project related criteria pollutant emissions from construction and operation non-permitted (limited to equipment not subject to District permits) should be identified and quantified. Emissions analysis should be performed using CalEEMod (**Cal**ifornia **E**mission **E**stimator **Mod**el), which uses the most recent approved version of relevant Air Resources Board (ARB)

emissions models and emission factors. CalEEMod is available to the public and can be downloaded from the CalEEMod website at: www.caleemod.com.

b) **Nuisance Odors:** The Project should be evaluated to determine the likelihood that the Project would result in nuisance odors. Nuisance orders are subjective, thus the District has not established thresholds of significance for nuisance odors. Nuisance odors may be assessed qualitatively taking into consideration of Project design elements and proximity to off-site receptors that potentially would be exposed objectionable odors.

c) **Health Risk Screening/Assessment:** A Health Risk Screening/Assessment identifies potential Toxic Air Contaminants (TAC's) impact on surrounding sensitive receptors such as hospitals, daycare centers, schools, work-sites, and residences. TAC's are air pollutants identified by the Office of Environmental Health Hazard Assessment/California Air Resources Board (OEHHA/CARB) (https://www.arb.ca.gov/toxics/healthval/healthval.htm) that pose a present or potential hazard to human health. A common source of TACs can be attributed to diesel exhaust emitted from both mobile and stationary sources. Industry specific TACs generated must also be identified and quantified.

The District recommends the Project be evaluated for potential health impacts to surrounding receptors (on-site and off-site) resulting from operational and multi-year construction TAC emissions.

i) The District recommends conducting a screening analysis that includes all sources of emissions. A screening analysis is used to identify projects which may have a significant health impact. A prioritization, using CAPCOA's updated methodology, is the recommended screening method. A prioritization score of 10 or greater is considered to be significant and a refined Health Risk Assessment (HRA) should be performed. The prioritization calculator can be found at:
http:www.valleyair.org/busind/pto/emission_factors/Criteria/Toxics/Utilities/PRIORITIZATION%20RMR%202016.XLS.

ii) The District recommends a refined HRA for projects that result in a prioritization score of 10 or greater. It is recommended that the Project proponent contact the District to review the proposed modeling protocol. The Project would be considered to have a significant health risk if the HRA demonstrates that the Project related health impacts would exceed the Districts significance threshold of 20 in a million for carcinogenic risk and 1.0 for the Acute and Chronic Hazard Indices.

Please provide the following information electronically to the District for review:

- HRA AERMOD model files
- HARP2 files
- Summary of emissions source locations, emissions rates, and emission factor calculations and methodology.

More information on toxic emission factors, prioritizations and HRAs can be obtained by:

- E-Mailing inquiries to: hramodeler@valleyair.org; or
- The District can be contacted at (559) 230-6000 for assistance; or
- Visiting the Districts website (Modeling Guidance) at http://www.valleyair.org/busind/pto/Tox_Resources/AirQualityMonitoring.htm

d) **Ambient Air Quality Analysis:** An ambient air quality analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of the ambient air quality standards. The District recommends that an AAQA be performed for the Project if emissions exceed 100 pounds per day of any pollutant.

If an AAQA is performed, the analysis should include emissions from both Project specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis. Specific information for assessing significance, including screening tools and modeling guidance is available online at the District's website www.valleyair.org/ceqa.

2) In addition to the discussions on potential impacts identified above, if preliminary review indicates that an EIR should be prepared, the District recommends the EIR also include the following discussions:

a) A discussion of the methodology, model assumptions, inputs and results used in characterizing the Project's impact on air quality. To comply with CEQA requirements for full disclosure, the District recommends that the modeling outputs be provided as appendices to the EIR. The District further recommends that the District be provided with an electronic copy of all input and output files for all modeling.

b) A discussion of the components and phases of the Project and the associated emission projections, including ongoing emissions from each previous phase.

c) A discussion of Project design elements and mitigation measures, including characterization of the effectiveness of each mitigation measure incorporated into the Project.

d) A discussion of whether the Project would result in a cumulatively considerable net increase of any criteria pollutant or precursor for which the San Joaquin Valley Air Basin is in non-attainment. More information on the District's attainment status can be found online by visiting the District's website at: http://valleyair.org/aqinfo/attainment.htm.

District Rules and Regulations

3) The proposed Project may be subject to District rules and regulations, including: Regulation VIII (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance), and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations). In the event an existing building will be renovated, partially demolished or removed, the Project may be subject to District Rule 4002 (National Emission Standards for Hazardous Air Pollutants).

4) This Project will be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and will require District permits. Prior to construction, the Project proponent should submit to the District an application for an Authority to Construct (ATC). For further information or assistance, the project proponent may contact the District's Small Business Assistance (SBA) Office at (559) 230-5888.

5) Per District Rule 9510 (Indirect Source Review) section 4.4.3, a development project on a facility whose primary functions are subject to District Rule 2201 or District Rule 2010 are exempt from the requirements of the rule. The District has reviewed the information provided and has determined that the primary functions of this Project are subject to District Rule 2201 (New and Modified Stationary Source Review Rule) or District Rule 2010 (Permits Required). As a result, District 9510 requirements and related fees do not apply to the Project referenced above.

   Therefore, you are required to obtain a District Authority to Construct prior to installation of equipment that controls or may emit air contaminants, including but not limited to emergency internal combustion engines, boilers, and baghouses. For more information please visit http://www.valleyair.org/busind/pto/ptoforms/1ptoformidx.htm or contact the District's Small Business Assistance.

6) The Project may be subject to District Rule 9410 (Employer Based Trip Reduction) if the Project would result in employment of 100 or more "eligible" employees. District

Rule 9410 requires employers with 100 or more "eligible" employees at a worksite to establish an Employer Trip Reduction Implementation Plan (eTRIP) that encourages employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes. Under an eTRIP plan, employers have the flexibility to select the options that work best for their worksites and their employees. Information about how District Rule 9410 can be found online at: www.valleyair.org/tripreduction.htm. For additional information, you can contact the District by phone at 559-230-6000 or by e-mail at etrip@valleyair.org.

7) The above list of rules is neither exhaustive nor exclusive. To identify other District rules or regulations that apply to this Project or to obtain information about District permit requirements, the applicant is strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (559) 230-5888. Current District rules can be found online at the District's website at: www.valleyair.org/rules/1ruleslist.htm.

The District recommends that a copy of the District's comments be provided to the Project proponent. If you have any questions or require further information, please call Sharla Yang at (559) 230-5934.

Sincerely,

Arnaud Marjollet
Director of Permit Services

for: Brian Clements
Program Manager

AM: sy