APPENDIX D

REGIONAL AND BACKGROUND INFORMATION AND APPLICABLE STATUTES, REGULATIONS, PLANS, AND STANDARDS

APPENDIX D - REGIONAL AND BACKGROUND INFORMATION AND APPLICABLE STATUTES, REGULATIONS, PLANS, AND STANDARDS

D.1 INTRODUCTION

This appendix describes the regional and background information, and the Federal, state, and local statutes, regulations, plans, and standards that are applicable to each of the resources evaluated in Chapters 3 and 4 of the Desert Quartzite Solar Project (DQSP) California Desert Conservation Area (CDCA) Plan/Environmental Impact Statement/Environmental Impact Report (Final PA/EIS/EIR).

D.2 AIR RESOURCES

D.2.1 Regional and Background Information

Regional Climate

The Project site is located in southeastern California, in the Colorado Desert. The climate in the Blythe area is categorized as a desert climate, with dry, hot summers and mild winters. The region is characterized by extreme fluctuations of daily temperatures, strong seasonal winds, and clear skies. January is the coldest month, with a mean low temperature of 41.7 degrees Fahrenheit (°F). July is the hottest month, with a mean high temperature of 108.4°F.

Temperature and precipitation data were measured at Blythe from July 1948 through June 2016 (Western Regional Climate Center [WRCC] 2018a). The mean temperature for the Blythe station is 73.7°F, and the mean annual precipitation is 3.55 inches. More than half of the precipitation occurs between November and March. Although rainfall occurs primarily in the winter months, the region is periodically influenced by subtropical weather conditions, especially sudden monsoonal late summer storms. Monthly average temperatures and precipitation for the area are summarized in Table D.2-1.

A wind rose from Blythe Airport, for the years 2008 to 2018, is shown in Figure D.2-1. This figure shows the predominant wind directions in the Project area are from the northwest, south, and southwest.

Table D.2-1. Monthly Average Temperature and Precipitation, Blythe Meteorological Station

Month	Monthly Average Temperature (°F)		Precipitation (Inches)
	Maximum	Minimum	Mean
January	66.9	41.7	0.48
February	71.9	45.4	0.44
March	78.5	50.2	0.35
April	86.4	56.5	0.15
May	95.2	64.5	0.02
June	104.5	72.7	0.02
July	108.4	81.1	0.28
August	106.7	80.3	0.60

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3/8/2019

Desert Quartzite
Solar Project EIS/EIR

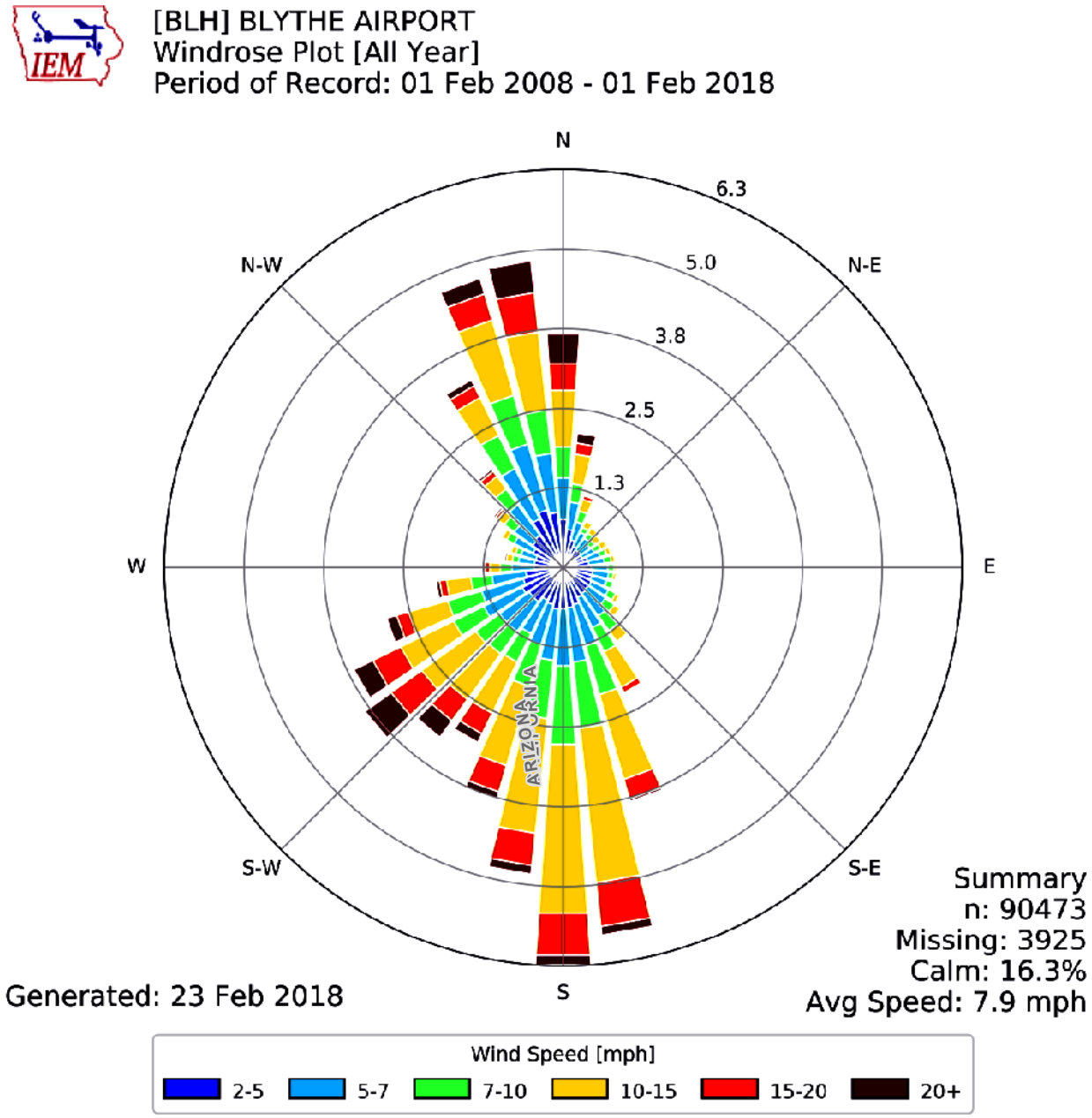

Figure D.2-1
Blythe Airport
Wind Rose Diagram

Date: 3/8/2019
Sources: AECOM, ESRI, IEM, US Census

Table D.2-1. Monthly Average Temperature and Precipitation, Blythe Meteorological Station

Month	Monthly Average Temperature (°F)		Precipitation (Inches)
	Maximum	Minimum	Mean
September	101.5	73.1	0.34
October	89.8	60.8	0.26
November	75.9	48.6	0.19
December	66.6	41.3	0.41
Annual	87.7	59.7	3.55

Source: WRCC 2018a

Existing Air Quality

Air Quality Standards

The Federal Clean Air Act (CAA) and the California Clean Air Act (CCAA) both require the establishment of standards for ambient concentrations of air pollutants, called Ambient Air Quality Standards (AAQS). The Federal standards, the National AAQS (NAAQS) established by USEPA, are typically higher (less protective) than the California state (CAAQS), which are established by the California Air Resources Board (CARB). The Federal and state air quality standards are listed in Table D.2-2. The times over which the various air quality standards are measured range from 1 hour to an annual average. The standards are read as a concentration, in parts per million (ppm), or as a weighted mass of material per a volume of air, in milligrams or micrograms of pollutant in a cubic meter of air (mg/m3 or µg/m3, respectively).

Table D.2-2. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O_3)	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)
	1 Hour	—	0.09 ppm (180 µg/m^3)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)
	1 Hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)[a]	Annual	0.053 ppm (100 µg/m^3)	0.030 ppm (57 µg/m^3)
	1 Hour	0.100 ppm[a] (188 µg/m^3)	0.18 ppm (339 µg/m^3)
Sulfur Dioxide (SO_2)[b]	Annual	0.030 ppm for certain areas	—
	24 Hour	0.14 ppm for certain areas	0.04 ppm (105 µg/m^3)
	3 Hour	0.5 ppm (1,300 µg/m^3)	—
	1 Hour	0.075 ppm[b] (196 µg/m^3)	0.25 ppm (655 µg/m^3)
Particulate Matter (PM_{10})	Annual	—	20 µg/m^3
	24 Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter ($PM_{2.5}$)	Annual	12.0 µg/m^3	12 µg/m^3
	24 Hour	35 µg/m^3	—
Sulfates (SO_4)	24 Hour	—	25 µg/m^3
Lead	30 Day Average	—	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	—
	Rolling 3-Month Average	0.15 µg/m^3	—

Table D.2-2. Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Hydrogen Sulfide (H_2S)	1 Hour	—	0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m^3)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.

Notes:
a -To attain the 1-hour 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 ppb.
b - 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.
Source: CARB 2015a, USEPA 2015b

Criteria Air Pollutants

The following subsections describe the source and associated health effects of the Criteria Air Pollutants.

Ozone (O_3)

Ozone (O_3) is not directly emitted from stationary or mobile sources, but is formed as the result of chemical reactions in the atmosphere between directly emitted O_3 precursors, primarily nitrogen oxides (NO_x), and hydrocarbons (volatile organic compounds or VOCs) being of primary concern, in the presence of sunlight. Pollutant transport from the South Coast Air Basin (Los Angeles Area) is one source of the pollution experienced in the eastern Riverside County portion of the Mojave Desert Air Basin (MDAB).

The 1- and 8-hour ozone concentrations measured at the eastern border of Riverside County have been very slowly decreasing over time. The raw collected air quality data indicate that the ozone violations occurred primarily during the sunny and hot periods typical during May through September.

O_3 is considered a respiratory irritant and prolonged exposure can reduce lung function, aggravate asthma and increase susceptibility to respiratory infections. Exposure to levels of ozone above the current ambient air quality standard can lead to human health effects such as lung inflammation, tissue damage, impaired lung function, coughing, chest tightness, shortness of breath, and the worsening of asthma symptoms. Harmful health effects are associated with outdoor workers, athletes, children and others who spend greater amounts of time outdoors during smoggy periods.

Nitrogen Dioxide (NO_2)

The entire MDAB is classified as attainment for the state 1-hour and annual and Federal annual NO_2 standards. The NO_2 attainment standard could change due to the new Federal 1-hour standard, but a review of the air basin-wide monitoring data suggests that the prospective new standard would not changes the status for NO_2 in the MDAB.

Approximately 90 percent of the NO_x emitted from combustion sources is nitric oxide (NO), while the balance is NO_2. NO is oxidized in the atmosphere to NO_2, but some level of photochemical activity is needed for this conversion. The highest concentrations of NO_2 typically occur during the fall. The winter atmospheric conditions can trap emissions near ground level, but with less substantial photochemical activity (sun light), NO_2 levels are relatively low. In the summer the conversion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions disperse pollutants, preventing the accumulation of NO_2. The NO_2 concentrations in the Project area are well below the NAAQS and CAAQS.

NO_2 is a respiratory irritant and may affect those with existing respiratory illness, including asthma. Exposure to NO_2 along with other traffic-related pollutants, is associated with respiratory symptoms, episodes of respiratory illness and impaired lung functioning.

Carbon Monoxide (CO)

The MDAB is classified as attainment for the state and Federal 1- and 8-hour CO standards. The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level. These conditions occur frequently in the wintertime late in the afternoon, persist during the night and may extend 1 or 2 hours after sunrise. The Project area has a lack of significant mobile source emissions and has CO concentrations that are well below the NAAQS and CAAQS.

Exposure to CO near the levels of the ambient air quality standards can lead to fatigue, headaches, confusion, and dizziness. CO interferes with the blood's ability to carry oxygen. Exposure to CO is especially harmful to those with heart disease and has been associated with aggravation of angina pectoris and other aspects of coronary heart disease, decreased exercise tolerance in people with peripheral vascular disease and lung disease, impairment of central nervous system functions, and possible increased risk to fetuses.

Particulate Matter (PM_{10}) and Fine Particulate Matter ($PM_{2.5}$)

PM_{10} can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere.

MDAB is classified as non-attainment for state PM_{10} standards and unclassified for the Federal PM_{10} standard (CARB 2015b). Table 3.2-1 shows recent PM_{10} and $PM_{2.5}$ concentrations, and shows clear exceedances of the state 24-hour PM10 standard. It should be noted that an exceedance does not necessarily mean violation or non-attainment, as exceptional events do occur and some of those events, which may not count as violations, may be included in the data. The MDAB is designated as non-attainment for the state PM_{10} standard.

Fine particulate matter, or $PM_{2.5}$, is derived mainly either from the combustion of materials, or from precursor gases (SO_x, NO_x, and VOC) through complex reactions in the atmosphere. $PM_{2.5}$ consists mostly of sulfates, nitrates, ammonium, elemental carbon, and a small portion of organic and inorganic compounds.

The entire MDAB is classified as attainment for the Federal standard and, in the Project area, is designated unclassified for the state $PM_{2.5}$ standards. As indicated in Table 3.2-1, $PM_{2.5}$ concentrations did not exceed applicable standards during the 5-year study period. This divergence in the PM_{10} and $PM_{2.5}$ concentration levels and attainment status indicates that a substantial fraction of the ambient particulate matter levels are most likely due to localized fugitive dust sources, such as vehicle travel on unpaved roads, agricultural operations, or wind-blown dust. Fugitive dust, unlike combustion source particulate and secondary particulate, is composed of a much higher fraction of larger particles than smaller particles, so the $PM_{2.5}$ fraction of fugitive dust is much smaller than the PM_{10} fraction. Therefore, when PM_{10} ambient concentrations are significantly higher than $PM_{2.5}$ ambient concentrations this tends to indicate that a large proportion of the PM_{10} are from fugitive dust emission sources, rather than from combustion particulate or secondary particulate emission sources.

Particulates may lead to excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease.

Sulfur Dioxide (SO_2)

The entire MDAB is classified as attainment for the state and Federal SO_2 standards.

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Sources of SO_2 emissions within the MDAB come from a wide variety of fuels: gaseous, liquid and solid; however, the total SO_2 emissions within the eastern MDAB are limited due to the limited number of major stationary sources and California's and USEPA's substantial reduction in motor vehicle fuel sulfur content. The Project area's SO_2 concentrations are well below the NAAQS and CAAQS.

Effects from SO_2 exposures at levels near the one-hour standard include bronchoconstriction accompanied by symptoms, which may include wheezing, shortness of breath and chest tightness, especially during exercise or physical activity. Children, the elderly, and people with asthma, cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) are most susceptible to these symptoms. SO_2 is a respiratory irritant that can cause narrowing of the airways leading to wheezing and shortness of breath. Long-term exposure to SO_2 can cause respiratory illness and aggravate existing cardiovascular disease.

Toxic Air Contaminants

Toxic air contaminants (TACs) are substances that have the potential to be emitted into the ambient air that have been determined to present some level of acute or chronic health risk (cancer or non-cancer) to the general public. These pollutants may be emitted in trace amounts from various types of sources, including combustion sources. TACs that may be produced by construction and operation of the proposed Project are listed in Table D.2-3, including the most relevant health effects. The current California list of TACs includes approximately 200 compounds, including particulate emissions from diesel-fueled engines (CARB 2011).

Table D.2-3. Toxic Air Contaminants and Associated Health Effects

Contaminant	Characteristics	Health Effects
Vinyl Chloride	This chlorinated hydrocarbon is a colorless gas with a mild, sweet odor.	Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness and headaches. Long-term exposure through inhalation and oral exposure causes liver damage. Cancer is a major concern from exposure via inhalation.
Benzene	Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust.	Short-term inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Long-term inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects and increased incidences of leukemia have been observed in humans occupationally exposed to benzene. A Group A human carcinogen.
Formaldehyde	Formaldehyde exposure may occur by breathing contaminated indoor air, tobacco smoke, or ambient urban air.	Short-term and long-term inhalation exposure to formaldehyde in humans can result in respiratory symptoms, and eye, nose, and throat irritation. Short-term high exposure may lead to eye, nose and throat irritation, and in the respiratory tract, nasal obstruction, pulmonary edema and dyspnea. Prolonged or repeated exposures have been associated with allergic sensitization, respiratory symptoms, and decrements in lung function. A Group B1 probable human carcinogen.
Diesel Particulate Matter (DPM)	Diesel particulate matter is emitted from both mobile and stationary sources of diesel powered on-road and off-road equipment.	Occupational exposures to diesel exhaust particles have been associated with significant cross-shift decreases in lung function. Increased cough, labored breathing, chest tightness, and wheezing have been associated with exposure to diesel exhaust in bus garage workers. A number of adverse long-term non-cancer effects have been associated with exposure to diesel exhaust. Occupational studies have shown that there may be a greater incidence of cough, phlegm and chronic bronchitis among those exposed to diesel exhaust than among those not exposed. Reductions in pulmonary function have also been reported following occupational exposures in chronic studies. Exposure to diesel exhaust has also shown cellular changes in laboratory animals.
Acrolein	Arolein is a powerful irritant.	Short-term exposures to levels above 1.0 ppm result in mucous hypersecretion and exacerbation of allergic airway response in animal models. Moderately higher exposures may result in severe lacrimation, and irritation of the mucous membranes of the respiratory tract. Death due to respiratory failure has been associated with high level exposures. Long term exposure to acrolein may result in structural and functional changes in the respiratory tract, including lesions in the nasal mucosa, and pulmonary inflammation.

Table D.2-3. Toxic Air Contaminants and Associated Health Effects

Contaminant	Characteristics	Health Effects
1,3–Butadiene	Motor vehicle exhaust is a constant source of 1,3-butadiene. Although 1,3-butadiene breaks down quickly in the atmosphere, it is usually found in ambient air at low levels in urban and suburban areas.	Short-term exposure to 1,3-butadiene by inhalation in humans results in irritation of the eyes, nasal passages, throat, and lungs. The EPA has classified 1,3-butadiene as carcinogenic to humans by inhalation.
Naphthalene	Naphthalene is used in the production of phthalic anhydride; it is also used in mothballs.	Short-term exposure of humans to naphthalene by inhalation, ingestion, and dermal contact is associated with hemolytic anemia, damage to the liver, and neurological damage. Cataracts have also been reported in workers acutely exposed to naphthalene by inhalation and ingestion. Long-term exposure of workers and rodents to naphthalene has been reported to cause cataracts and damage to the retina. Hemolytic anemia has been reported in infants born to mothers who "sniffed" and ingested naphthalene (as mothballs) during pregnancy. A Group C, possible human carcinogen.
Polycyclic Organic Matter (POM)	The term polycyclic organic matter (POM) defines a broad class of compounds that includes the polycyclic aromatic hydrocarbon compounds (PAHs), of which benzo[a]pyrene is a member. POM compounds are formed primarily from combustion and are present in the atmosphere in particulate form. Sources of air emissions are diverse and include cigarette smoke, vehicle exhaust, home heating, laying tar, and grilling meat.	Cancer is the major concern from exposure to POM. Epidemiologic studies have reported an increase in lung cancer in humans exposed to coke oven emissions, roofing tar emissions, and cigarette smoke; all of these mixtures contain POM compounds. Animal studies have reported respiratory tract tumors from inhalation exposure to benzo[a]pyrene and forestomach tumors, leukemia, and lung tumors from oral exposure to benzo[a]pyrene. The EPA has classified seven PAHs (benzo[a]pyrene, benz[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) as Group B2, probable human carcinogens.

Source: SRA 2013, as cited in Riverside County 2014

D.2.2 Applicable Statutes, Regulations, Plans, and Standards

Air quality in the Project area's air basin is regulated by Federal, state, and local regulatory agencies with the responsibility for maintaining ambient air quality within Federal and state standards. The Environmental Protection Agency (EPA) is the Federal agency responsible for establishing air quality regulations on a Federal level. The Federal Clean Air Act (CAA) and its subsequent amendments establish air quality regulations and the National Ambient Air Quality Standards (NAAQS), and delegate the enforcement of these standards to the states. In California, the California Air Resources Board (CARB) is responsible for enforcing air pollution regulations. The CARB has in turn delegated the responsibility of regulating stationary emission sources to regional air agencies. In the Project area's air basin, which is located in eastern Riverside County, the Mojave Desert Air Quality Management District (MDAQMD) has this responsibility.

The following sections summarize the air quality rules and regulations that apply to the Project.

Federal

The Federal CAA applies to all air emission sources and to all areas within the United States. Regulations adopted under the CAA that would apply to the Project would include the NAAQS as well as other requirements that have been adopted as part of the MDAQMD's Federally approved plans and programs.

Federal Emission Standards. The EPA has also adopted on-road and off-road engine emission reduction requirements, including Federal Exhaust and Evaporative Emission Standards for Light-Duty Vehicles and Light-Duty Trucks, Federal Emission Standards for Heavy-Duty and Non-road Engines, and other emission control programs that affect the Project's potential impacts to air quality through the phase-in of clean fuel and engine requirements.

General Conformity Rule. The General Conformity Rule (40 Code of Federal Regulations [CFR] Part 93) requires that Federal agencies demonstrate that Federal actions conform with the applicable State Implementation Plan (SIP) in order to ensure that Federal activities do not hamper local efforts to control air pollution. The EPA general conformity rule applies to Federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The *de minimis* emission thresholds are based on the attainment status of each air basin. Since the Project is located in an air basin that is designated attainment for all Federal criteria pollutants, it is not subject to the General Conformity emissions thresholds.

State

California Clean Air Act

The CCAA was signed into law in 1988 and, for the first time, clearly spelled out in statute California's air quality goals, planning mechanisms, regulatory strategies, and standards of progress. The CCAA provides the state with a comprehensive framework for air quality planning regulation. Prior to passage of the CCAA, Federal law contained the only comprehensive planning framework. As part of its authority within the state of California, and as allowed under the Federal CAA, CARB has established the California Ambient Air Quality Standards (CAAQS). The CAAQS are at least as stringent as the NAAQS. Both the NAAQS and CAAQS are shown in Table D.2-2.

The CARB has oversight over air quality in the state of California. The CARB is responsible for the development of the SIP, which provides a framework for attaining and maintaining the NAAQS within the state of California. In turn, development of individual inputs to the SIP is the responsibility of local air pollution control agencies. Regulation of individual stationary sources has been delegated to local air pollution control agencies.

The CARB is responsible for developing programs designed to reduce emissions from non-stationary sources, including motor vehicles and off-road equipment, including heavy equipment for construction. Section 2449 specifies diesel fuel standards and diesel-powered vehicle idling times.

The CARB and the California Office of Environmental Health Hazard Assessment (OEHHA) are also responsible for developing regulations governing TACs. TACs include air pollutants that can cause serious illnesses or increased mortality, even in low concentrations. The CARB and OEHHA identify specific air pollutants as toxic air contaminants (TACs), develop health

thresholds for exposure to TACs, and develop guidelines for conducting health risk assessments for sources of TAC emissions.

Local

Mojave Desert Air Quality Management District (MDAQMD)

As discussed above, the Project would be located in the jurisdiction of the MDAQMD. The MDAQMD is responsible for regulating stationary sources of air emissions in the Project area's air basin. Stationary sources that have the potential to emit air pollutants into the ambient air are subject to the Rules and Regulations adopted by the MDAQMD. The following MDAQMD rules are applicable to the Project (MDAQMD 2015).

Rule 401 – Visible Emissions. Rule 401 states that a person shall not discharge into the atmosphere, from any single source of emissions whatsoever, any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

- As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the U.S. Bureau of Mines, or
- Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in Subsection A [of the Rules].

Rule 402 - Nuisance. Rule 402 prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Rule 403 – Fugitive Dust. Rule 403 requires control of fugitive dust emissions during activities such as construction that have the potential to generate dust. The provisions of Rule 403 include the following:

1) A person shall not cause or allow the emissions of fugitive dust from any transport, handling, construction or storage activity so that the presence of such dust remains visible in the atmosphere beyond the property line of the emission source. (Does not apply to emissions emanating from unpaved roadways open to public travel or farm roads. This exclusion shall not apply to industrial or commercial facilities).
2) A person shall take every reasonable precaution to minimize fugitive dust emissions from wrecking, excavation, grading, clearing of land and solid waste disposal operations.
3) A person shall not cause or allow particulate matter to exceed 100 micrograms per cubic meter ($\mu g/m^3$) when determined as the difference between upwind and downwind samples collected on high volume samplers at the property line for a minimum of five hours.
4) A person shall take every reasonable precaution to prevent visible particulate matter from being deposited upon public roadways as a direct result of their operations. Reasonable precautions shall include, but are not limited to, the removal of particulate matter from equipment prior to movement on paved streets or the prompt removal of any material from paved streets onto which such material has been deposited.

5) Subsections (a) and (c) shall not be applicable when the wind speed instantaneously exceeds 40 kilometers (25 miles) per hour, or when the average wind speed is greater than 24 kilometers (15 miles) per hour. The average wind speed determination shall be on a 15 minute average at the nearest official air-monitoring station or by wind instrument located at the site being checked.

6) The provisions of this rule shall not apply to agricultural operations.

Rule 403.2 – Fugitive Dust. Rule 403.2 applies to construction sites, including those on BLM land, and requires the owner or operator of any Construction/Demolition source to:

1) Use periodic watering for short-term stabilization of Disturbed Surface Area to minimize visible fugitive dust emissions. For purposes of this Rule, use of a water truck to maintain moist disturbed surfaces and actively spread water during visible dusting episodes shall be considered sufficient to maintain compliance;

2) Take actions sufficient to prevent project-related Trackout onto paved surfaces;

3) Cover loaded haul vehicles while operating on Publicly Maintained paved surfaces;

4) Stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than thirty days, except when such a delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate Visible Fugitive Dust emissions;

5) Cleanup project-related Trackout or spills on Publicly Maintained paved surfaces within twenty-four hours; and

6) Reduce non-essential Earth-Moving Activity under High Wind conditions. For purposes of this Rule, a reduction in Earth-Moving Activity when visible dusting occurs from moist and dry surfaces due to wind erosion shall be considered sufficient to maintain compliance.

Rule 403.2 also requires that the owner/operator of a Construction/Demolition source disturbing 100 or more acres shall, in addition to the provisions of subsection (2):

7) Prepare and submit to the MDAQMD, prior to commencing Earth-Moving Activity, a dust control plan that describes all applicable dust control measures that will be implemented at the project;

8) Provide stabilized access route(s) to the project site as soon as is feasible. For purposes of this Rule, as soon as is feasible shall mean prior to the completion of Construction/Demolition activity;

9) Maintain natural topography to the extent possible;

10) Construct parking lots and paved roads first, where feasible; and

11) Construct upwind portions of project first, where feasible.

Rule 404 – Particulate Matter Concentration. Rule 404 restricts emissions of particulate matter from any source based on the concentrations specified in Table 404(a) of this rule.

Rule 405 – Solid Particulate Matter Weight. Rule 405 restricts emissions of particulate matter from any source based on the concentrations specified in Table 405(a) of this rule.

Rule 406 – Specific Contaminants. Rule 406 restricts emissions of sulfur compounds to 500 ppm or less, and restricts emissions of halogens, which are not generally emitted from construction projects.

Rule 407 – Liquid and Gaseous Air Contaminants. Rule 407 restricts emissions of carbon monoxide to 2,000 ppm or less, on a dry-weight basis, over any period of 15 consecutive minutes.

Rule 408 – Circumvention. Rule 408 restricts the building, erection, installation or use of any equipment, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which would otherwise constitute a violation of Chapter 3 (commencing with Section 41700) of Part 4, of Division 26 of the Health and Safety Code or of the MDAQMD Rules.

Rule 409 – Combustion Contaminants. Rule 409 restricts discharge into the atmosphere from the burning of fuel, combustion contaminants exceeding 0.23 gram per cubic meter (0.1 grain per cubic foot) of gas calculated to 12 percent of carbon dioxide (CO_2) at standard conditions averaged over a minimum of 25 consecutive minutes.

Rule 431 – Sulfur Content of Fuels. Rule 431 restricts the use of any gaseous fuel containing sulfur compounds in excess of 800 ppm calculated as hydrogen sulfide at standard conditions, or any liquid or solid fuel having a sulfur content in excess of 0.5 percent by weight.

Rule 442 – Usage of Solvents. Rule 442 restricts the emission of volatile organic compounds (VOCs) from any solvent material to 1,190 pounds per month, and requires proper storage and handling of VOC-containing solvents.

Riverside County General Plan

The Riverside County General Plan Air Quality Element (AQ) includes policies that limit emissions within the County boundaries. The goal is to support efforts to decrease region-wide pollution emissions, as surrounding jurisdictions significantly impact Riverside County's air quality. Policies were designed to establish a regional basis for improving air quality. The Riverside County General Plan's Air Quality Element (AQ) discusses the following applicable policies regarding air quality within Riverside County (Riverside County 2018a). Relevant countywide policies that address air quality within the County boundaries are also located in the Land Use Element (LU) of the County General Plan are also described below (Riverside County 2015a).

Air Quality Element

Policy AQ 2.1. The County land use planning efforts shall assure that sensitive receptors are separated and protected from polluting point sources to the greatest extent possible.

Policy AQ 2.2. Require site plan designs to protect people and land uses sensitive to air pollution through the use of barriers and/or distance from emissions sources when possible.

Policy AQ 4.7. To the greatest extent possible, require every project to mitigate any of its anticipated emissions which exceed allowable emissions as established by the SCAQMD, MDAQMD, SOCAB [South Coast Air Basin], the Environmental Protection Agency and the California Air Resources Board.

Policy AQ 4.8. Expand, as appropriate, measures contained in the County's Fugitive Dust Reduction Program for the Coachella Valley to the entire County.

Policy AQ 4.10. Coordinate with the SCAQMD and MDAQMD to create a communications plan to alert those conducting grading operations in the County of first, second, and third stage smog alerts, and when wind speeds exceed 25 miles per hour. During these instances all grading operations should be suspended.

Land Use Element

Policy LU 7.4. Retain and enhance the integrity of existing residential, employment, agricultural, and open space areas by protecting them from encroachment of land uses that would result in impacts from noise, noxious fumes, glare, shadowing, and traffic.

Policy LU 11.2. Ensure adequate separation between pollution producing activities and sensitive emission receptors, such as hospitals, residences, child care centers and schools.

D.3 BIOLOGICAL RESOURCES – VEGETATION

D.3.1 Regional and Background Information

Sand Dunes

Multiple authors have mapped the extent of sand deposits both onsite, and within the regional sand corridor. Most of these reports were either published in peer-reviewed literature, or were specifically developed by or for BLM in support of the DRECP. Studies by Zimbelman et al. (1995), Lancaster and Tchakerian (1996), Lancaster and Tchakerian (2003), Muhs et al. (2003), Potter and Weigand (2016), and Muhs et al. (2017) evaluate whether sand sources are expected to be active or dormant, or are expected to be regional in nature versus primarily local. Also, the agency has identified and considered other sources (Stone 2006, Hayhurst and Bedrossian 2010, Lancaster 2014, and Ironwood 2016) that map the extent of sand deposits in the Project area. In addition, three site-specific studies, Ironwood 2016 (Appendix M), Huffman-Broadway 2017 (Appendix N), and Kenney 2017 (Appendix O) were developed by the Applicant in support of the Project application. These reports have not been peer-reviewed or published in the scientific literature. Therefore, although BLM has considered their findings in its analysis of the potential impact of the Project on sand dunes, these are just a few of the many sources of information considered.

Description of the Regional Sand Corridor

The regional sand corridor is a complex, regional-scale network of sand dunes, oriented from northwest to southeast, stretching from the central Mojave Desert in the west to the Colorado River. In some areas, there are also dunes on the east side of the Colorado River, stretching into Arizona. Within this network, there are three specific linear features. The southern-most of the systems is the Dale Lake-Palen-Ford dune system, also referred to as the Clark's Pass system by some authors (such as Zimbelman et al. 1995; Lancaster and Tchakerian 2003).

Several authors have studied sand transport, both regionally within southern California, and locally in the Ford-Palen area. A primary focus of these studies is the question of the source of the sand within the corridor. The two prevailing hypotheses are that the sand corridor operates as a transport corridor on a regional scale, and that the corridor is made up of an agglomeration

of individual dune systems, disconnected from each other, and each sourced and operating on a local scale.

In the regional scale model advanced by Zimbelman et al. (1995), sand enters the corridor primarily through surface water erosion and deposition at its western upwind end, is blown along the flat surfaces, including playa lakebeds, in the valleys, then is pushed up sand ramps by saltation through low mountain passes, is deposited on the leeward side of the mountain passes, and then continues to be blown eastward. Zimbelman et al. (1995) describe the pathway for the sand dunes near the Project area to originate from Dale Playa at the eastern end of the Twentynine Palms Valley. From there, the sand climbed sand ramps through Clark's Pass, which is a gap between the Sheep Hole and Pinto Mountains. East of Clark's Pass, the sand entered Palen and Ford Playas. From there, the sand continued to travel eastward through Chuckwalla Valley, and thus entered the Palo Verde Mesa, where it ends directly within the Project area.

Zimbelman et al. (1995) noted that previous authors had assumed that the corridor was discontinuous, consisting of a series of deposits locally derived from the nearest playas. Based on their remote sensing and field observations, Zimbelman et al. (1995) hypothesized that the areas were connected, forming a "more through-going movement of windblown sand", and that they might be considered "rivers of sand". This hypothesis has formed the basis for much subsequent research, and is the basis for the potential concern that large-scale project development in one part of the corridor could have indirect impacts to sand-related resources in others parts of the corridor.

Lancaster and Tchakerian (1996) made a detailed study of the sediments in the sand ramps, including those in the Dale Lake-Palen-Ford system. They concluded that the sediments in the sand ramp component of the corridors consisted of a mixture of eolian, alluvial, and talus deposits.

In addition to the literature discussing the regional characteristics of the sand corridors, multiple site-specific studies support the hypothesis that the part of the corridor that overlies the Project area is not continuous. Although the Project area falls within the sand corridor shown in Figure D-15 of DRECP, multiple surface geology maps show that the bulk of the Project area is composed of alluvial deposits, and that active sand dunes occupy only a small portion of the site. The geologic map of the site in Figure 3.7-1 was derived from the U.S. Geological Survey (USGS) map of the region (Stone 2006). This map shows that eolian sand is present only in the northern gen-tie corridor of the Project area. The site-specific mapping by Ironwood (2016) shows that only the northern gen-tie corridor and two other small areas are mapped as sand dunes. Regional scale mapping of the eolian system in the East Riverside area was done by Lancaster (2014), in support of the DRECP. This map shows the corridor west of the Project area to be a complex mix of dune deposits, but the Project site itself is occupied mostly by alluvial deposits (Qoa) and dune deposits (Qye/Qal).

The report by Kenney (2017) postulates that most onsite sand sources are local, and that the sand corridor does not currently operate as a continuous river of moving sand. Kenney (2017) identified and mapped the sand sources for the local SMZs, and found that their sources were locally derived from surface water erosion in Wiley's Well Basin, the Mule Mountains, and the McCoy Mountains. Kenney (2017), based on his own research and citing California Geological

Survey comments on the DRECP in 2015, posited that the use of the term "sand transport corridor" is misapplied because connectivity between individual sand dune areas may not exist.

Current Level of Activity

Several authors since 1995 have questioned whether the regional model of the formation of the corridor by Zimbelman et al. (1995) is accurate or, if it is accurate, whether it represents current conditions. In general, most researchers have continued to use the phrases "sand transport path" and "sand transport corridor" even while demonstrating that the corridors are largely inactive today. Neither Zimbelman et al. (1995) who initiated the hypothesis of "rivers of sand," nor Lancaster and Tchakerian (2003), nor any other researchers claim that the Dale Lake-Ford-Palen system is currently active as a continuous transport corridor. Although they do not specifically make a statement about the current level of activity, Zimbelman et al. (1995) use past tense words in describing the system, including statements such as sand ramps "allowed sand to exit the valley", the orientation of the mountains "acted like a funnel", and the sand "traversed the northern end of the Eagle Mountains."

Although Zimbelman et al. (1995) used the phrase "sand transport paths" and hypothesized that the system was continuous, they also acknowledged that the timing of sand transport along the path was episodic. They based this conclusion on the presence of multiple paleosols (relict soil profiles) present within the deposits. To form a soil profile, a sand deposit would need to be inactive and exposed on the surface for a substantial period of time. Therefore, the presence of such paleosols indicates that active sand deposition was punctuated by extended periods of inactivity.

Bach (1995) observed that dune mobility indices based on wind energy, precipitation, and evapotranspiration predicted that most dunes in the Mojave and Colorado Deserts should be active, while the observation was that most of the dunes were currently inactive.

Lancaster and Tchakerian (1996) specifically studied the sand ramps that were instrumental in allowing sand transport across topographic barriers in the model of Zimbelman et al. (1995), and stated that most sand ramps in the Mojave are relict features and are not currently accumulating sand. They stated that, with the exception of the western part of the Devil's Playground (an area not associated with the Dale Lake-Palen-Ford system), the sand transport corridors are "currently in a dormant or relict (inactive, vegetated) state".

Many studies of eolian deposits in the area concentrate on mapping dune systems and nearby alluvial deposits to establish both local and regional geologic timelines of dune activity. Lancaster and Tchakerian (2003) used mineral luminescence dating across several of the different sand systems to identify general periods of activity and inactivity on a regional basis. Their study included Dale Lake at the western end of the Dale Lake-Palen-Ford system (which they referred to as the Clark's Pass system), but did not include any areas further to the east in this system, including the Project area. Their main conclusion is that operation of the systems in the Mojave Desert is episodic, depending on sediment supply, availability, and mobility. Even though Lancaster and Tchakerian (2003) refer to this system as a "sand transport corridor", they concluded this system was active between >35,000 years ago to 25,000 years ago, and then again from 15,000 to 10,000 years ago (Lancaster and Tchakerian 2003).

For the Project area and the Dale Lake-Palen-Ford dune systems, the conclusion that operation of the sand corridor is episodic is important in demonstrating that, even if the regional Dale Lake-

Palen-Ford dune system operated as a continuous transport corridor in the past, it probably does not do so today.

Future Activity

Episodic activity of the sand deposits within the sand corridor indicates that it will eventually re-activate, and stable deposits will eventually expand to cover a larger area than they do at present. This will occur regardless of the magnitude or types of changes that may occur from future climate change. However, the timeframe in which this re-activation will occur, and the extent to which it will impact the Project area, are unknown. It is also unknown whether this re-activation will be the next phase of change to the corridor, or whether the corridor will become less active before entering a new period in which it is more active.

Potter and Weigand (2016) used remote sensing to study rates of dune migration in the Palen Dune field between 1985 and 2014. They observed that there was little change to the overall area of the sand accumulation zone, with the leading (southeastern) edge of the dune field shifting by less than 0.1 kilometers (about 300 feet) between 1995 and 2014. However, they observed that there were substantial changes in the level of activity within the zone. In 1984, much of the dune area was inactive, with active sand fields separated by scattered brush and desert grass cover. Between 1985 and 2014, active sand sheets that had been separate spread to cover areas that had been vegetated. Individual dunes migrated at rates up to 50 meters per year, and the area of active dunes expanded from 21.3 square kilometers (approximately 5,263 acres) to 34.12 square kilometers (approximately 8,430 acres), an increase of 60 percent. This suggests that inactive areas within dune fields can become active within the timeframe of the life of the DQSP Project.

Special Status Species

Harwood's Milkvetch

Harwood's milkvetch is an annual herb in the Fabaceae with a CNPS Rank of 2B.2. It is known to occur in desert dunes and Mojavean and Sonoran desert scrub at elevations ranging from 0 to 2,300 feet amsl. Its mechanism for dispersal is unknown, but most likely its inflated seed pods get carried by the stiff westerly winds and deposited at some wind-breaking disturbance such as soil berms.

Abrams' Spurge

Abrams' spurge is annual herb in the Euphorbiaceae with a CNPS Rank of 2B.2. It is known to occur in Mojavean desert scrub, playas, and sandy/silty Sonoran desert scrubs at elevations ranging from sea level to 3,000 feet amsl.

Utah Vine Milkweed

Utah vine milkweed is a perennial herb in the Apocynaceae with a CNPS Rank of 4.2. It typically grows along wash margins and in sandy/gravelly areas throughout the Sonoran and Mojave deserts of California, sprawling and clambering over common shrubs for support. Flowering from April to September, its elevation range is 300 to 4,700 feet amsl.

Ribbed Cryptantha

Ribbed cryptantha is an annual herb in the Boraginaceae with CNPS Rank of 4.3. It occurs on fine sandy soil and shallow dunes within Sonoran and Mojavean creosote bush scrub, at an elevation range below 3,200 feet amsl. Flowering from January through May, it has been widely documented from California herbarium records, with several occurrences (including a reference population) within approximately 5 miles of the Study Area.

Harwood's Eriastrum

Harwood's eriastrum is an annual herb in the Polemoniaceae with a CNPS Rank of 1B.2. Harwood's eriastrum is also a BLM Sensitive species. The species is endemic to California, being distributed on sand dunes in desert areas of Riverside, San Bernardino, and San Diego counties. Typically flowering occurs from March to May, its elevation range is 400 to 3,000 feet amsl.

Desert Unicorn-Plant

Desert unicorn-plant is a perennial herb in the Martyniaceae with a CNPS Rank of 4.3. It is historically known to occur in sandy Sonoran desert scrub at elevations ranging from 490 to 3,280 feet amsl.

Invasive Weeds

Invasive weeds are defined as species of nonnative plants that are included on the California Invasive Plant Council's (CAL-IPC) list of invasive species for the Mojave Desert, have a rating of High or Moderate (CAL-IPC 2015) and are included on the United States Department of Agriculture (USDA) database of Federal Noxious Weeds (USDA 2015a), the USDA California state-listed Noxious Weeds (USDA 2015b), California Department of Food and Agriculture's (CDFA) Noxious Weed List (CDFA 2015), and the BLM National List of Invasive Weed Species of Concern (BLM 2008). Weeds are commonly categorized as either noxious, invasive, or both. The differences in definition lie in both legislative- and action-oriented considerations. Invasive weeds are of particular concern in wildlands because of their potential to degrade habitat and disrupt the ecological functions of an area (Cal-IPC 2006). Specifically, noxious and invasive weeds can alter habitat structure, increase fire frequency and intensity, decrease forage (including for special-status species, such as Mojave desert tortoise), exclude native plants, and decrease water availability for both native plants and animals. Soil disturbance and gathering and channeling water create conditions favorable to the introduction of new noxious and invasive weeds or the spread of existing populations. Construction equipment, fill, and mulch can act as vectors introducing noxious and invasive weeds into an area.

D.3.2 Applicable Statutes, Regulations, Plans, and Standards

This section provides a discussion of Federal, state, and local environmental statutes, regulations, plans, and standards applicable to the Project for vegetation resources and Federal and state jurisdictional areas.

Federal

National Environmental Policy Act

NEPA (42 USC §4321 et seq.) declares a continuing Federal policy that directs "a systematic, interdisciplinary approach" to planning and decision-making and requires environmental statements for "major Federal actions significantly affecting the quality of the human environment." Implementing regulations by the CEQ (40 CFR Parts 1500-1508) requires Federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environment and avoid or minimize adverse environmental impacts. Federal agencies are further directed to emphasize significant environmental issues in project planning and to integrate impact studies required by other environmental laws and Executive Orders into the NEPA process. The NEPA process should therefore be seen as an overall framework for the environmental evaluation of Federal actions. The BLM is the Lead Agency under NEPA for the Project.

Executive Order 13112 – Invasive Species

Executive Order 13112 was signed in February 1999 and established the National Invasive Species Council. This Order requires agencies to identify actions that may affect the status of invasive species. It also directs Federal agencies not to authorize, fund, or carry out actions that they believe are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that the agency has prescribed, it has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

Plant Protection Act of 2000

The Plant Protection Act of 2000 (7 USC Ch. 104) established a Federal program to control the spread of noxious weeds. The Secretary of Agriculture is authorized to publish a list of plants designated as noxious weeds (7 USC §7712(f)). The movement of all such weeds in interstate or foreign commerce is prohibited except under permit.

Lacey Act, as amended

The Lacey Act (16 USC §§3371-3378) protects plants and wildlife by creating civil and criminal penalties for a wide variety of violations including illegal take, possession, transport or sale of protected species.

Federal Endangered Species Act

The FESA (16 USC §1531 et seq.) designates threatened and endangered species, both animal and plant species, and provides measures for their protection and recovery. "Take" of listed wildlife, and of listed plant species located on Federal land, is prohibited without obtaining a Federal permit. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Harm includes any act that actually kills or injures fish or wildlife, including significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife. Activities that damage the habitat of (i.e., harm) listed wildlife species require approval from the USFWS for terrestrial species. The FESA also generally requires determination of critical habitat for listed species. If critical habitat has been designated, impacts to areas that contain the primary constituent

elements identified for the species, whether or not it is currently present, is also prohibited. FESA §7 and §10 provide two pathways for obtaining authority to take listed species.

For projects proposed on Federal lands, Federal agencies, such as the BLM are required by the FESA to ensure that any action they authorize, implement, or fund, including energy developments, will not jeopardize the continued existence of any Federally threatened or endangered species or destroy or adversely modify designated critical habitat. In a §7 consultation, the lead agency (e.g., BLM) prepares a BA that analyzes whether the project is likely to adversely affect listed wildlife or plant species or their critical habitat, and proposes suitable avoidance, minimization, or compensatory mitigation measures. If the action may adversely affect the species, the USFWS then has 135 days to respond to the BA by issuing its BO determining whether the project is likely to jeopardize the species or result in adverse modification of critical habitat.

If a "nonjeopardy" or "no adverse modification" opinion is provided by the USFWS, the action agency may proceed with the action as proposed. If a jeopardy or adverse modification opinion is provided, the USFWS may prepare a BO with reasonable and prudent measures to minimize take and associated, mandatory terms and conditions that describe the methods for accomplishing the reasonable and prudent measures. In a BO that results in a jeopardy or adverse modification conclusion, the USFWS may develop mandatory reasonable and prudent alternatives to the proposed action.

BLM Sensitive Species

BLM Sensitive Species are species designated by the State Director that are not already Federally listed, proposed, or candidate species, or state listed because of potential endangerment. BLM's policy is to "ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered." Various offices of the BLM maintain a list of special-status plant and wildlife species that are to be considered as part of the management activities carried out by the BLM on the lands that they administer.

California Desert Conservation Area Plan, 1980 as Amended

The CDCA Plan guides the management of all BLM-administered lands in the Mojave, Sonoran, and a small portion of the Great Basin Deserts. In total, the CDCA Plan includes an area of approximately 25 million acres, 12 million of which are public lands. The primary goal of the CDCA Plan is to provide guidance for the overall maintenance of the land while simultaneously planning for multiple uses and balancing the human needs with the need to protect the natural environment.

The CDCA Plan includes 12 elements: Cultural Resources; Native American; Wildlife; Vegetation; Wilderness; Wild Horse and Burro; Livestock Grazing; Recreation; Motorized Vehicle Access; Geology, Energy and Mineral Resources; Energy Production and Utility Corridors; and Land-Tenure Adjustment. Each of the elements contains goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA, and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. In addition, each element provides both a desert-wide perspective of the planning decisions for one major resource or issue of public concern as well as more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.

Northern and Eastern Colorado Desert Coordinated Management Plan

The Northern and Eastern Colorado (NECO) Desert Coordinated Management Plan (BLM 2002), an amendment to the CDCA Plan, is a landscape-scale, multi-agency planning effort that protects and conserves the natural resources of the California portion of the Sonoran Desert while also managing its use for humans. This plan was prepared under the same regulations that implement the FLPMA of 1976. The NECO planning area of the CDCA spans 5.5 million acres in the southeastern California Desert, and covers the Project area. The NECO Plan Amendment to the CDCA Plan, which was adopted in December 2002, provides management direction for a variety of sensitive species and habitats on BLM and National Park Service land, as well as the U.S. Marine Corps Chocolate Mountain Aerial Gunnery Range.

The NECO Plan Amendment to the CDCA Plan primarily addresses recovery of the desert tortoise (*Gopherus agassizii*), conservation of a variety of other species, and modification of management of wild burro herds in the planning area, and updates policies regarding OHV use and public lands access and use. As part of its focus on desert tortoise recovery and sensitive species protection, the NECO Plan Amendment to the CDCA Plan has established several Desert Wildlife Management Areas, which cover much of the designated critical habitat for the desert tortoise. Specifically, these Wildlife Management Areas consist of a system of integrated ecosystem management for special-status species and natural communities on Federal lands, and regional standards and guidelines for public land health on BLM lands. The NECO Plan Amendment to the CDCA Plan also establishes several Wildlife Habitat Management Areas, which include habitat for desert bighorn sheep and other sensitive species in the planning area (BLM 2002).

California Desert Renewable Energy Conservation Plan

BLM issued the DRECP in October, 2016. The DRECP amends the CDCA Plan, specifically with respect to natural resource conservation and renewable energy development. The DRECP establishes Ecological and Cultural Conservation and Recreation Designations, and Renewable Energy Activities, Policies, and Allocations.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 USC §§661-666) applies to any Federal project where the waters of any stream or other body of water are impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with the USFWS and the appropriate state wildlife agency. These agencies prepare reports and recommendations that document project effects on wildlife and identify measures that may be adopted to prevent loss or damage to wildlife resources. The term "wildlife" includes both animals and plants. Provisions of the Act are implemented through the NEPA process and §404 permit process.

Clean Water Act (33 U.S.C. § 1251 et seq.)

The Clean Water Act (CWA) is the principal Federal statute protecting navigable waters and adjoining shorelines from pollution. The Clean Water Act is administered by the EPA and the United States Army Corps of Engineers (USACE). The USACE is responsible for regulating the discharge of fill material into waters of the United States. Waters of the United States include lakes, rivers, streams and their tributaries, as well as wetlands. Since its enactment, the CWA prohibits the discharge of pollutants into waters of the United States without a permit. Section 404 of the CWA provides that whenever any person discharges dredged or clean fill material into

Waters of the United States including, without limitation, wetlands, streams, and bays (e.g., while undertaking road construction, bridge construction, or streambed alteration), a permit is required from the USACE. Through field reconnaissance surveys and analyses of National Wetlands Inventory (NWI) and watershed data, it is unlikely that there are any jurisdictional waters of the United States.

State

California Endangered Species Act

The CESA includes provisions for the protection and management of species listed by the state as endangered or threatened, or designated as candidates for such listings. CESA includes a requirement for consultation "to ensure that any action authorized by a state lead agency is not likely to jeopardize the continued existence of any endangered or threatened species… or result in the destruction or adverse modification of habitat essential to the continued existence of the species" (§ 2090). Plants of California declared to be endangered, threatened, or rare are listed at 14 California Code of Regulations (CCR) § 670.2. Animals of California declared to be endangered, threatened, or rare are listed at 14 CCR § 670.5. The administering agency for the above authority is the CDFW.

California Fish and Game Code Section 3503, 3511, 4700, 5050, and 5515

These California Fish and Game Code (FGC) sections list bird (primarily raptor), mammal, amphibian, and reptile species that are classified as fully protected in California. Fully protected species are prohibited from being taken or possessed except under specific permit requirements. These Codes also prohibit the take, possession, or needless destruction of the nests or eggs of any bird, including birds of prey or their nests or eggs, except as otherwise provided by the code or any regulation made pursuant thereto.

California Native Plant Protection Act

The California Native Plant Protection Act prohibits importation of rare and endangered plants into California, "take" of rare and endangered plants, and sale of rare and endangered plants. CESA defers to the California Native Plant Protection Act, which ensures that state-listed plant species are protected when state agencies are involved in projects subject to CEQA. In this case, plants listed as rare under the California Native Plant Protection Act are not protected under CESA but rather under CEQA.

California Desert Native Plants Act

The California Desert Native Plants Act protects certain species of California desert native plants from unlawful harvesting on both public and privately owned lands. The law applies in the counties of Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego. Within these counties, the CDNPA prohibits the cutting, removal, sale, or possession of specific native desert plants unless a person has a valid permit or wood receipt, and the required tags and seals. The appropriate permits, tags and seals must be obtained from the sheriff or commissioner of the county where collecting will occur, and the county will charge a fee.

The following plant species inventoried in the Project area fall under the jurisdiction of this law: desert lily (*Hesperocallis undulata*), silver cholla (*Cylindropuntia echinocarpa*), California

barrel cactus (*Ferocactus cylindraceus*); common fishhook cactus (*Mammillaria tetrancistra*), microphyll woodland trees; ironwood (*Olneya tesota*), blue palo verde (*Parkinsonia florida*), honey mesquite (*Prosopis glandulosa*).

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act provides state coordination with the CWA, which is described above. It provides a mechanism by which the Regional Water Quality Control Boards certify that Federal actions that result in a discharge to waters, including Federally issued CWA permits to ensure the compatibility of Federal and state water quality guidelines, are in compliance with Section 401 of the CWA, which requires such Federal actions to comply with state water quality standards. The act provides for the development and periodic review of water quality control plans (basin plans) that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. Basin plans are primarily implemented by using the National Pollution Discharge Elimination System permitting system to regulate waste discharges to ensure that water quality objectives are met. Waste discharges may include fill, any material resulting from human activity, or any other "discharge" that may directly or indirectly impact Waters of the State relative to the implementation of Section 401 of the CWA. Waters regulated under Porter-Cologne include isolated waters that are no longer regulated by USACE. Developments which impact jurisdictional waters must demonstrate compliance with the goals of the Act by developing SWPPPs, Standard Urban Storm Water Mitigation Plans, and other measures in order to obtain a CWA §401 certification.

California Fish and Game Code Sections 1600-1616 – Streambed Alteration Agreement

This Code requires that any person, state or local government agency, or public utility notify the CDFW and obtain a streambed alteration agreement before they begin any construction project that will divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake, use materials from a streambed, or result in the disposal or disposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake. In general, CDFW jurisdiction extends to the top of the stream or bank, or to the outer edge of riparian vegetation, whichever is wider.

Local

Riverside County General Plan

The Riverside County General Plan (Riverside County 2015a) includes policies that address biological resources within the County boundaries. Countywide policies that seek to preserve biological resources are located in the Land Use Element and Open Space Element of the County General Plan, and include:

Land Use Element (LU)

Policy LU 9.2. Require that development protect environmental resources by compliance with the Multipurpose Open Space Element of the General Plan and Federal and state regulations such as CEQA, NEPA, the Clean Air Act, and the Clean Water Act.

D.4 BIOLOGICAL RESOURCES – WILDLIFE

D.4.1 Regional and Background Information

Mojave Desert Tortoise

Agassiz's Mojave desert tortoise is a long-lived, medium-sized, burrowing, terrestrial turtle in the family Testudinidae. They grow slowly, reach sexual maturity at a delayed age, and live long lives; they have low reproductive output each year, but can reproduce for many years and show no reproductive senescence; their eggs and hatchlings have very low survivorship but adults display high survivorship. Populations are able to overcome low annual reproductive rates and low survivorship of eggs and young because of the long, reproductive lives and high survivorship of adult females. Thus, human activities that negatively affect population density and survival of individual adult tortoises are likely to cause declines in tortoise populations (Doak et al. 1994; Wisdom et al. 2000; Reed et al. 2009; Tuma et al. 2016).

Agassiz's Mojave desert tortoise was listed under the Endangered Species Act (ESA) by the USFWS following concerns that several populations had undergone significant and precipitous declines. In response to reports of die-offs from scientists and managers in the field, the USFWS emergency-listed tortoise populations located north and west of the Colorado River in California, Nevada, Utah, and the northwestern portion of Arizona as Endangered on August 4, 1989. The USFWS subsequently changed the desert tortoise to Threatened status on April 2, 1990. The desert tortoise was listed as Threatened by the State of California on August 3, 1989. The Project area is within the Colorado Desert Recovery Unit of the Mojave Population of the Desert Tortoise (USFWS 2011a).

Agassiz's Mojave desert tortoise occupies a broad range of landforms throughout the Mojave and Colorado Deserts, at elevations ranging from below sea level to 2,225 meters (7,300 feet) amsl (Luckenbach 1982). Within California, the most favorable habitat occurs at elevations of approximately 305 to 914 meters (1,000–3,000 feet) amsl (Luckenbach 1982), though more recent evidence from range-wide monitoring efforts indicates the desert tortoises are consistently documented above 914 meters (3,000 feet) (USFWS 2006a, 2011). Luckenbach (1982) reported that desert tortoises are often found on valley bottoms and on bajadas; Bury et al. (1994) determined desert tortoises in the eastern Mojave Desert occur on a variety of landforms from flats and bajadas to rocky slopes. Andersen et al. (2000) found that higher tortoise densities were encountered in areas with loamy soils. Mojave desert tortoises typically occupy habitats dominated by creosote bush scrub at lower elevations, and blackbrush scrub and juniper woodland ecotones at higher elevations (Germano et al. 1994). Luckenbach (1982) reported that the most favorable habitats within California contained a high diversity of perennial plant species and high production of annual plant (forage) species. Mojave desert tortoises in California are mostly distributed among four communities, including creosote scrub, cactus scrub, saltbush scrub, and Joshua Tree woodland, but are most commonly found in desert scrub vegetation communities dominated by creosote (Luckenbach 1982). Mojave desert tortoises use cover sites such as soil burrows, pallets, and caliche caves (Bulova 1994; O'Connor et al. 1994). Tortoises hibernate, aestivate, or rest in subterranean burrows or caves, spending as much as 98 percent of their time underground (Marlow 1979; Nagy and Medica 1986).

Mojave desert tortoises are active during the spring, summer, and fall periods, and generally inactive during the winter. Tortoises begin their spring activity period upon emergence from hibernacula. In the eastern Mojave Desert, Mojave desert tortoises emerge from hibernacula

between mid-February and late April (Rautenstrauch et al. 1998; Nussear et al. 2007); in the western Mojave Desert, tortoises emerge from hibernacula between early March and late April (Burge 1977). Tortoises are most active between mid-April and mid-May, a period when they forage on spring annual plants. Mojave desert tortoises are herbivorous, consuming a diet of annual, perennial, and grass species. The majority of their diet consists of the succulent parts and blooms of spring annual plants. For approximately 60-65 days between mid-May and mid-July, tortoise activity declines significantly due to increasing temperatures and precipitation, and most enter a period of dormancy called aestivation. Mojave desert tortoises are typically activated from aestivation when mid-summer thunderstorms produced by the North American Monsoon between early to mid-July and September provide opportunities for drinking. Mojave desert tortoises remain active until late October, when most enter a second dormancy period – hibernation. Tortoises in the northeastern portion of the species' range may hibernate for as long as six months (Woodbury and Hardy 1948; Bury et al. 1994).

Mojave desert tortoises occupy home ranges that include cover sites, mates, mineral salt licks, and drinking sites, and have a "remarkable" knowledge of the locations of these resources within their homes ranges, and often travel along well-worn paths (Berry 1986). Arguably the most important resources within the home ranges of tortoises are cover sites, particularly burrows and caliche caves. Not only do cover sites offer protection from extreme temperatures and predators, but they also serve as nest site locations and centers for social interactions among tortoises, particularly mate-seeking. Males typically use more cover sites, cover greater distances, and use larger areas as they search for females to court and copulate (Burge 1977; Bulova 1994; O'Connor et al. 1994).

The decline in Mojave desert tortoise population densities and abundances since the 1970s has been attributed to numerous threats, and the plight of the desert tortoise has been described as a "death by a thousand cuts." In the final rule for Endangered Species Act listing, the USFWS attributed population decline to two major factors: 1) habitat loss and degradation caused by human activities such as OHV use, urbanization, agriculture, energy development, military training, mining, and livestock grazing; and 2) mortality of individual desert tortoises to disease (URTD), increased predation by common ravens, collection by humans for pets or consumption, and collisions with vehicles on paved and unpaved roads (USFWS 1990). Anthropogenic threats are exacerbated during droughts, and can lead to disease outbreaks where multiple threats combine to add stress to tortoise populations. These threats and others have cumulatively contributed to desert tortoise population declines within the Mojave Population of the species, which includes the Colorado Desert Recovery Unit (USFWS 2011a). The population in the Colorado Desert Recovery Unit was estimated to have declined from 3,319 in 2004 to 1,403 in 2012 (Allison and McLuckie 2018).

Mojave Fringe-Toed Lizard

The Mojave fringe-toed lizard (*Uma scoparia*) is designated as a BLM Sensitive species and CDFW SSC. This species is endemic to southern California deserts and Arizona, where it is restricted to eolian sand habitats in the deserts of Inyo, Los Angeles, Riverside and San Bernardino Counties. The species is restricted to areas with fine aeolian sand including both large and small dunes, margins of dry lakebeds and washes, and isolated pockets against hillsides. The species may also share specific habitat requirements that the closely related

Coachella Valley Fringe-toed lizard (*Uma inornata*) needs, such as access to shaded sand for thermoregulatory burrowing (Muth 1991). Distribution of the Mojave fringe-toed lizard is naturally fragmented because of their obligate habitat specificity to eolian sand, a patchy habitat type (Murphy et al. 2006).

The Mojave fringe-toed lizard is found in arid, sandy, sparsely vegetated habitats and is associated with creosote scrub throughout much of its range (Norris 1958; Jennings and Hayes 1994). Windblown sand is required for the lizard's life cycle. This species is restricted to habitats of fine, loose eolian sand, typically with sand grain size no coarser than 0.375 mm in diameter (Turner et al. 1984; Jennings and Hayes 1994; Stebbins 1944). Mojave fringe-toed lizard diets consist of insects such as, but not limited to, ants, sand cockroaches, grasshoppers and spiders.

Mojave fringe-toed lizards normally hibernate from November to February, emerging from hibernation sites from March to April. The breeding season is April to July, and adult Mojave fringe-toed lizards reach sexual maturity two summers after hatching (Jennings and Hayes 1994; USFWS 2011b). From April to May, while temperatures are relatively cool, this species is active during mid-day; from May to September, lizards are active in mornings and late afternoon, but seek cover during the hottest parts of the day. Mojave fringe-toed lizards can usually be found burrowed in the sand on the side of the dunes.

Couch's Spadefoot Toad

Couch's spadefoot toad (*Scaphiopus couchii*) is a CDFW Species of Special Concern and a BLM Sensitive species. It is found where substrate is capable of sustaining temporary breeding pools for at least nine days (to allow larval development), and loose enough to permit burial in subterranean burrows. Breeding habitat includes temporary impoundments at the base of dunes as well as road or railroad embankments, temporary pools in washes or channels, pools that form at the downstream end of culverts, and playas.

Western Burrowing Owl

The western burrowing owl (*Athene cunicularia hypugaea*) is a CDFW SSC. Burrowing owls inhabit open dry grasslands and desert scrubs throughout much of the western U.S. and southern interior of western Canada. They are typically a year-round resident in much of California (Gervais et al. 2008).

Little is understood about the migratory and post-breeding dispersal movements of burrowing owls. Breeding populations from the northern range of the species are apparently migratory, though southern California populations are probably year-round residents (Thomsen 1971). Increases in winter population sizes within southern California, particularly within the Imperial Valley, are probably the result of immigration of owls from more northerly areas (Coulombe 1971; Rosenberg and Haley 2004). Nesting burrowing owls banded in Idaho have been observed wintering in southern California (Brian W. Smith, personal communication, November 2006). A significant portion of the burrowing owl population in southern California includes year-round residents and short-distance dispersers. Male burrowing owls that are year-round residents may overwinter in burrows within their nesting areas, as this allows them to retain possession of burrows and territories, as well as maintain the burrows (Johnsgard 2002:165). Burrowing owls in southern California may winter in the nesting burrow or a nearby burrow following successful

fledging of juveniles, but are more likely to disperse from the nesting area if the nest fails (Catlin et al. 2005; Rosier et al. 2006). Thus, burrowing owls may occur in the Project area as year-round residents and breeders, and/or as winter residents from populations that breed further north, and/or as transients during dispersal and migration.

In the Colorado Desert, burrowing owls generally occur in scattered populations, but they can have a higher affinity for agricultural lands where rodent and insect prey tend to be more abundant, including along the lower Colorado River (Gervais et al. 2008). This strong affinity to irrigated agricultural lands is evident in concentration of burrowing owls in the Imperial Valley, where it is estimated that approximately 70 percent of the species breeding population in California resides (Audubon 2017a). From this core population of owls, it is estimated that between 20 to 25 percent of the population remains within the Imperial Valley during the winter, with immigration likely occurring to the north (Coulombe 1971). This winter migration has the potential to provide a source of emigration into the Project area, since the Imperial Valley population is approximately 45 miles southwest of the Project area. Burrowing owls tend to be opportunistic feeders. Their diet consists primarily of large arthropods, mainly including beetles and grasshoppers. Small mammals, especially mice and voles (*Microtus*, *Peromyscus*, and *Mus* spp.), are also important food items for this species. Other prey animals include reptiles and amphibians, young cottontail rabbits, bats, and birds, such as sparrows and horned larks. Consumption of insects increases during the breeding season.

Western burrowing owls typically nest in mammal burrows, especially those created by California ground squirrels, kit fox, and coyote; although they may use Mojave desert tortoise burrows or man-made structures including culverts and debris piles. Burrowing owls have a strong affinity for previously occupied nesting and wintering habitats. They often return to burrows used in previous years, especially if they were successful at reproducing there in previous years (Gervais et al. 2008). The southern California breeding season, defined as from pair bonding to fledging, is from February to August, with a peak of breeding activity from April through July.

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is protected by the BGEPA and MBTA, and is a California Fully Protected and BLM Sensitive species. This large eagle is found throughout the U.S. typically occurring in open country, prairies, tundra, open coniferous forest and barren areas, especially in hilly or mountainous regions. Throughout their western range, the golden eagle can be either a year-round resident, or migratory (Kochert and Steenhof 2002; Audubon 2017b). Migratory patterns are usually fairly local in California where adults are relatively sedentary, but dispersing juveniles sometimes migrate south in the fall. This species is generally considered to be more common in southern California than in the northern part of the state (U.S. Forest Service [USFS] 2008).

Within the desert regions, this species usually builds nests on cliff ledges. Breeding in southern California starts in January, nest building and egg laying in February to March, and hatching and raising the young eagles occur from April through June. Once the young eagles are flying on their own, the adult eagles will continue to feed them and teach them to hunt until late November (WRI 2010). Due to the large investment in energy and time that an adult golden eagle is

required to provide in raising young, some eagles will forgo a season of reproduction even when food supply is abundant (WRI 2010).

Golden eagles need open terrain for hunting and prefer grasslands, deserts, savanna, and early successional stages of forest and shrub habitats. Golden eagles primarily prey on lagomorphs and rodents but will also take other mammals, birds, reptiles, and some carrion (Kochert et al. 2002).

Absent interference from humans, golden eagle breeding density is determined by either prey density or nest site availability, depending upon which is more limiting (USFWS 2009). A compilation of breeding season home ranges from several western United States studies showed an average home range of 20 to 33 square kilometers that ranged from 1.9 to 83.3 square kilometers (Kochert et al. 2002). Golden eagles in the Mojave Desert are believed to have large home ranges due to low prey densities.

Other Migratory Birds and Raptors

In addition to special-status avian species for which species-specific surveys were conducted (i.e., burrowing owl and golden eagle), many other common and special-status migratory birds and raptors are expected to occur within the Study Area. Not only does the Study Area provide nesting habitat for species of migratory birds and raptors, it is located along a major migration corridor (i.e., the Pacific Flyway, which runs from Alaska to Patagonia and stretches inland from the Pacific Ocean to encompass parts of Montana, Wyoming, Colorado and New Mexico). There are four National Wildlife Refuges within the Lower Colorado River Valley, including the Havasu, Bill Williams River, Cibola, and Imperial. Of these, the closest is the Cibola National Wildlife Refuge, which is located 12 miles from the Project area. There is also an Audubon Important Bird Area, called the Lower Colorado River Valley Important Bird Area, located along the river north of Blythe. Although the site is not situated within any of these areas, the Study Area's proximity to the Colorado River increases the likelihood of migratory birds stopping over.

Migratory birds and all raptors native to North America are afforded protection under the MBTA and FGC Sections 3503, 3503.5, and 3513. Therefore, general avian surveys were conducted to characterize avian use of the Study Area and assess Project risks to all species.

Desert Kit Fox

The desert kit fox (*Vulpes macrotis*) is protected by the FGC Section 4000 as a fur-bearing mammal. Desert kit foxes are fossorial mammals that occur in arid open areas, shrub grassland, and desert ecosystems. Desert kit fox typically consume small rodents, primarily kangaroo rats, rabbits, lizards, insects, and in some cases immature Mojave desert tortoises. Dens typically support multiple entrances, but desert kit fox may utilize single burrows for temporary shelter. Litters of one to seven young are typically born in February through April (Egoscue 1962; McGrew 1979).

American Badger

The American badger (*Taxidea taxus*) is a CDFW SSC. The species was once fairly widespread throughout open desert and grassland habitats of California. Badgers are now generally uncommon with a wide distribution across California, except from the North Coast area. Badgers inhabit burrows and often predate and forage on other small mammal burrows as evidenced by claw marks along the edges of existing burrows. This species is most abundant in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, parklands, and desert areas (Zeiner et al. 1990). Badgers feed mainly on various species of small mammals and capture some of their prey above ground, foraging on birds, eggs, reptiles, invertebrates, and carrion.

Bats

Many bat species occurring in Southern California are considered to be regionally sensitive by BLM and CDFW. The Project site and vicinity supports suitable roosting and foraging habitat for several bat species, including some of those considered sensitive by BLM and CDFW. An assessment was conducted for the Study Area and surrounding area to determine the presence of suitable roosting and foraging habitat for bat species known from the region. Some bat species, such as the leaf-nosed bat, range throughout the southwestern U.S. However, other species, including the spotted bat, western mastiff bat, and the big free-tailed bat, have ranges that extend into Mexico and South America. Roosts and natal colonies are typically located in protected or sheltered areas, such as rocky outcrops, cliffs, caves, mines, and abandoned buildings.

D.4.2 Applicable Statutes, Regulations, Plans, and Standards

The Project must comply with various Federal, state, and local laws. While some laws and policies provide constraints, others provide intent and direction for certain actions to occur. The following is a general overview of such guidance, which gives intent or direction for the proposed Project relevant to wildlife resources.

Federal

National Environmental Policy Act

NEPA (42 USC 4321 et seq.) declares a continuing Federal policy that directs "a systematic, interdisciplinary approach" to planning and decision-making and requires environmental statements for "major Federal actions significantly affecting the quality of the human environment." Implementing regulations by the CEQ (40 CFR Parts 1500-1508) requires Federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environmental and avoid or minimize adverse environmental impacts. Federal agencies are further directed to emphasize significant environmental issues in project planning and to integrate impact studies required by other environmental laws and Executive Orders into the NEPA process. The NEPA process should therefore be seen as an overall framework for the environmental evaluation of Federal actions. The BLM is the Lead Agency under NEPA for the Project.

Federal Endangered Species Act

The ESA includes provisions for protection and management of species that are Federally listed as threatened or endangered or proposed for such listing and of designated critical habitat for these species. The administering agency for the above authority for non-marine species is the USFWS.

BLM Sensitive Species

BLM Sensitive Species are species designated by the State Director that are not already Federally listed, proposed, or candidate species, or state-listed because of potential endangerment. BLM's policy is to "ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered." Various offices of the BLM maintain a list of special-status plant and wildlife species that are to be considered as part of the management activities carried out by the BLM on the lands that they administer.

California Desert Conservation Area Plan, 1980 as Amended

The CDCA Plan guides the management of all BLM-administered lands in the Mojave, Sonoran, and a small portion of the Great Basin Deserts. In total, the CDCA Plan includes an area of approximately 25 million acres, 12 million of which are public lands. The primary goal of the CDCA Plan is to provide guidance for the overall maintenance of the land while simultaneously planning for multiple uses and balancing the human needs with the need to protect the natural environment.

The CDCA Plan includes 12 elements: Cultural Resources; Native American; Wildlife; Vegetation; Wilderness; Wild Horse and Burro; Livestock Grazing; Recreation; Motorized Vehicle Access; Geology, Energy and Mineral Resources; Energy Production and Utility Corridors; and Land-Tenure Adjustment. Each of the elements contains goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA, and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. In addition, each element provides both a desert-wide perspective of the planning decisions for one major resource or issue of public concern as well as more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.

Northern and Eastern Colorado Desert Coordinated Management Plan

The NECO Plan Amendment to the CDCA Plan (BLM 2002) is a landscape-scale, multi-agency planning effort that protects and conserves the natural resources of the California portion of the Sonoran Desert while also managing its use for humans. This plan was prepared under the same regulations that implement the FLPMA of 1976. The NECO planning area of the CDCA spans 5.5 million acres in the southeastern California Desert, and covers the Project area. The NECO Plan Amendment to the CDCA Plan, which was adopted in December 2002, provides management direction for a variety of sensitive species and habitats on BLM and National Park Service land, as well as the U.S. Marine Corps Chocolate Mountain Aerial Gunnery Range.

The NECO Plan Amendment to the CDCA Plan primarily addresses recovery of the Mojave desert tortoise (*Gopherus agassizii*), conservation of a variety of other species, and modification of management of wild burro herds in the planning area, and updates policies regarding OHV use and public lands access and use. As part of its focus on Mojave desert tortoise recovery and sensitive species protection, the NECO Plan Amendment to the CDCA Plan has established

several Desert Wildlife Management Areas, which cover much of the designated critical habitat for the Mojave desert tortoise. Specifically, these Wildlife Management Areas consist of a system of integrated ecosystem management for special-status species and natural communities on Federal lands, and regional standards and guidelines for public land health on BLM lands. The NECO Plan Amendment to the CDCA Plan also establishes several Wildlife Habitat Management Areas, which include habitat for desert bighorn sheep and other sensitive species in the planning area (BLM 2002; Figure 3.4-10).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) includes provisions for protection of migratory birds, including basic prohibitions against any taking not authorized by Federal regulation. The administering agency for the above authority is the USFWS. The law contains no requirement to prove intent to violate any of its provisions. Wording in the MBTA makes it clear that most actions that result in "taking" or possession (permanent or temporary) of a protected species can be a violation of the act. The word "take" is defined as "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect (including nests, eggs, and feathers)."

Lacey Act

The Lacey Act, as amended (16 USC 3371-3378) protects plants and wildlife by creating civil and criminal penalties for a wide variety of violations including illegal take, possession, transport, or sale of protected species.

The Bald and Golden Eagle Protection Act

Bald eagle protection began in 1940 with the passage of the Eagle Protection Act, which was later amended to include golden eagle and was renamed. The Bald and Golden Eagle Protection Act makes it unlawful to import, export, take, sell, purchase, or barter any bald eagle or golden eagle, their parts, products, nests, or eggs. Take includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing. Exceptions may be granted by USFWS for scientific or exhibition use, or for traditional and cultural use by Native Americans. However, no permits may be issued for import, export, or commercial activities involving eagles.

Wild Horse and Burro Act of 1971, as amended

Herd Areas are those geographic areas where wild horses and/or burros were found at the time of the passage of the Wild Horse and Burro Act in 1971. Herd Management Areas are those areas within Herd Areas where the decision has been made, through Land Use Plans, to manage for populations of wild horses and/or burros. Herd Areas boundaries may only be changed when it is determined that areas once listed as Herd Areas are later found to be used only by privately owned horses or burros, or the Herd Area boundary does not correctly portray where wild horses and burros were found in 1971.

California Desert Renewable Energy Conservation Plan

BLM issued the DRECP in October, 2016. The DRECP amends the CDCA Plan, specifically with respect to natural resource conservation and renewable energy development. The DRECP establishes Ecological and Cultural Conservation and Recreation Designations, and Renewable Energy Activities, Policies, and Allocations.

State

California Endangered Species Act

The CESA includes provisions for the protection and management of species listed by the state as endangered or threatened, or designated as candidates for such listings. CESA includes a requirement for consultation "to ensure that any action authorized by a state lead agency is not likely to jeopardize the continued existence of any endangered or threatened species… or result in the destruction or adverse modification of habitat essential to the continued existence of the species" (§ 2090). Plants of California declared to be endangered, threatened, or rare are listed at 14 California Code of Regulations (CCR) § 670.2. Animals of California declared to be endangered, threatened, or rare are listed at 14 CCR § 670.5. The administering agency for the above authority is the CDFW.

Other Provisions of the California Fish and Game Code

These California Fish and Game Codes (CFGC) list bird (primarily raptor), mammal, amphibian, and reptile species that are classified as fully protected in California. Fully protected species are prohibited from being taken or possessed except under specific permit requirements. These Codes also prohibit the take, possession, or needless destruction of the nests or eggs of any bird, including birds of prey or their nests or eggs, except as otherwise provided by the code or any regulation made pursuant thereto.

Local

Riverside County General Plan

The Riverside County General Plan (Riverside County 2015a) includes policies that address biological resources within the County boundaries. Countywide policies that seek to preserve biological resources are located in the Land Use Element and Open Space Element of the County General Plan, and include:

Land Use Element (LU)

Policy LU 9.2. Require that development protect environmental resources by compliance with the Multipurpose Open Space Element of the General Plan and Federal and state regulations such as CEQA, NEPA, the Clean Air Act, and the Clean Water Act.

D.5 CULTURAL RESOURCES

D.5.1 Regional and Background Information

A cultural resource is a location of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. Cultural resources include archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups, e.g., "traditional cultural property" (BLM 2004). At both the state and Federal levels, cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance (Office of Historic Preservation 1995, National Park Service 1990). State and Federal laws, however, use different terms for significant cultural resources. California state

law discusses significant cultural resources as "historical resources," defining significant resources as those resources which have been found eligible for listing in the California Register of Historical Resources (CRHR) and National Register of Historic Places (NRHP), as applicable. Federal law uses the terms "historic properties" and "historic resources."

Prehistoric resources are associated with human occupation and use prior to sustained European contact. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. In California, the prehistoric period began over 12,000 years ago and extended through the 18th century until 1769, when the first Europeans permanently settled in California.

Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, cremation sites, shrines, or ethnic neighborhoods and structures.

Historic-period resources, both archaeological and built environment (i.e., structures, buildings, or other built features) begin with those associated with early European and Euroamerican exploration and settlement of an area and the beginning of a written historical record, and continue to the evidence of activities dating to 50 years before the present. They may include archaeological deposits, sites, structures, earthworks, traveled ways, artifacts, or other material remnants of human activity.

The term "historic property" is used for the purposes of §106 of the National Historic Preservation Act of 1966 (NHPA), and is defined in 36 CFR Part 800, the implementing regulations for §106, as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the [NRHP] . . . , [which] includes artifacts, records, and remains that are related to and located within such properties" (36 CFR §800.16(*l*)(1)). The term also includes "properties of traditional religious and cultural importance to an Indian tribe . . . that meet the National Register criteria" pursuant to 36 CFR §60.4 (36 CFR §800.16(*l*)(1)). For definitions of other terms used in this section, please refer to Appendix B. Historic properties are categorized as buildings, sites, structures, objects, and districts for the purposes of complying with §106.

Geological Setting

The Project is located in the southern east-west-trending valley pass on the Palo Verde Mesa. The mesa is a series of ancient raised river terraces associated with the Pleistocene course of the lower Colorado River. The relatively flat topography of the mesa slopes gently down from the northwest to the southeast and is bounded by the McCoy Mountains to the northwest and the Mule Mountains to the southwest. The valley pass, through which modern I-10 was built adjacent to the Coco-Maricopa Trail (CA-RIV-53T), was an important prehistoric transportation corridor from points east of the Colorado River to the Pacific Coast.

The Palo Verde Mesa is part of the northern extent of the Colorado Desert, a subdivision of the greater Sonoran Desert. Encircling the northern Gulf of California, the Colorado Desert spans portions of northwest Mexico, southwest Arizona, and southeast California (Schaefer, 1994a). It is a subtropical desert that is periodically influenced by tropical weather conditions, including massive seasonal rain storms known locally as monsoons.

The Colorado River, which forms the border between California and Arizona, originates in the Rocky Mountains and flows generally south through the southwestern Unites States and into the Gulf of California, in Mexico. As the river flows south from the Colorado Plateau, it enters a shallow valley where it forms a broad floodplain (Jahns 1954) that can reach up to 18 km in width. Much of the floodplain has been converted to farmland, but before recent development, the area formed a large wetland that would have been home to a variety of flora and fauna. The river bottom also was used by the late prehistoric and ethnographic inhabitants of the region to practice floodplain agriculture that focused on maize, beans, squash and gourds, and melons, among other plants (Castetter and Bell 1951:97–130).

At the beginning of the Holocene, the Colorado River retreated to the east and began to cut deeply into the surrounding sediments. Periodically, though, the river dramatically flooded, changed course, and flowed into previously dry inland areas. After large flood episodes, water from the Colorado River was occasionally impounded and diverted into the Salton Trough, creating a vast inland freshwater lake in the area of the historical Lake Cahuilla. Impounded waters from the Colorado River would continue to flow into the Salton Trough for years or even centuries until another major flood event sufficiently reworked the river delta at the Gulf of California to allow the river to resume its typical course. At these times, numerous ethnically and linguistically distinct Native American groups converged on the newly formed lake. Some of the intermittent prehistoric use of the Palo Verde Mesa likely dates from these episodes of inland lake activity.

Paleoclimate

Identifying the kinds and distribution of resources necessary to sustain human life in an environment and the changes in that environment over time is central to understanding whether and how an area was used during prehistory and history. During the time that humans have lived in California, the region in which the Project is located, the Colorado Desert, has undergone several climatic shifts. These shifts have resulted in variable availability of vital resources, and that variability has influenced the scope and scale of human use of the vicinity of the site. Consequently, it is important to consider the historical character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the area and its ecology.

The Pleistocene (1.8 million to 10,000 years ago), and the Holocene (10,000 years ago to the present) environmental record from the Mojave Desert provides a model for the Colorado Desert. Summaries of the development and changes in vegetation in the Mojave Desert and surrounding region during these periods are provided by Grayson (2011, pp. 153-164, 217-219, 230, 239-242), Spaulding (1990, as cited in CEC, 2010), Tausch et al. (2004, as cited in CEC, 2010), and Wigand and Rhode (2002, pp. 332–342, as cited in CEC, 2010). All note the vegetation history of this region has been primarily studied by analysis of plant macrofossils contained in prehistoric packrat middens. Pollen studies from this region are largely lacking.

In general, Tausch et al. (2004, fig. 2.3; see also Wigand and Rhode, 2002, pp. 321–332, as cited in CEC, 2010) note the Early Holocene (8500 to 5500 BC) in the Mojave Desert was characterized by a post-glacial warming trend, accompanied by periods characterized by variable moisture. After about 10,000 years ago, temperatures increased overall, but summer temperatures remained cooler than present. There is some evidence of an increase in

precipitation at this time, possibly resulting from more frequent and intense El Niño patterns (Spaulding 1995). First proposed by Antevs (1948), the reconstruction of an arid middle Holocene period (circa [ca.] 7,000–4,000 B.P.) is now supported by packrat midden, geomorphic, and pollen data (Byrne et al. 1979; Hall 1985; Holliday 1989; Mehringer 1986; Spaulding 1991). Although the middle Holocene was clearly warmer and more arid than present, the various lines of evidence suggest that the period was one of high climatic variability rather than unremitting heat and drought (Grayson 1993). Evidence from the late Holocene (after ca. 4000 B.P.) indicates at least three distinct climatic episodes that would have affected humans living in the desert. Studies of macrofossils from packrat middens and evidence for extended lacustral intervals in the Mojave Desert (Drover 1979; Enzel et al. 1992; Smith 1979; Wells et al. 1989), suggest that the period between circa 4000 and 2000 B.P. was generally cooler and notably wetter than present. Known as the Neoglacial, this period in the Mojave Sink region was marked by extensive desert lakestands supported by the flooding of the Mojave River, likely resulting from increased precipitation in the Transverse Ranges.

The Medieval Climatic Anomaly (MCA), which extended from about 1,200 to 700 years ago, was marked by generally warm temperatures and punctuated by extreme, extended droughts from A.D. 890 to 1100, and from A.D. 1210 to 1350 (Stine 1994). In the Mojave Desert, packrat middens provide evidence of effectively drier conditions associated with increased temperatures. Presently, there are no published records of increased spring activity or desert lake high stands throughout the Mojave during this period (Jones et al. 1999). In the Colorado Desert, though, Waters (1983) reports evidence for high stands of Lake Cahuilla during much of this interval. The sustained high water in Lake Cahuilla may have mitigated the effects of the droughts on local populations, although the Palo Verde Mesa surely would have been very dry.

The generally arid conditions of the MCA reversed sharply about 600 years ago, marking the beginning of the Little Ice Age (Grove 1988). A variety of data from the Mojave Desert indicate both lower temperatures and increased winter precipitation during this period. Cooler temperatures are suggested by the expansion of cold-loving blackbrush scrub into lower elevations at this time. Evidence for extended lakestands in the Mojave Sink (Enzel et al. 1989, 1992) indicates enhanced precipitation in the Transverse Ranges. Essentially modern climatic conditions only became established in the region about 150 years ago.

Prehistoric Background

The following overview of Colorado Desert culture history is a synthesis based on various studies. Importantly, it is grounded in the pioneering works of Malcolm J. Rogers and his studies on Colorado and Sonoran Desert archaeology (Rogers 1939, 1945, 1966). Since the early works of Rogers, other prehistorians have added new data and interpretations, refining understanding of the region's cultural sequence (Crabtree 1981; Schaefer 1994a; Schaefer and Laylander 2007; Warren 1984; Wilke 1976). The general cultural sequence for the Colorado Desert can be divided into four distinctive periods and extends back in age for a minimum of 12,000 years. The dates, provided here, represent estimates based on radiocarbon determinations corrected for changes in atmospheric carbon. They are shown as calibrated (cal) ages with calendar dates represented in years (B.P.) or the equivalent dates identified as B.C. or A.D.

Paleoindian Period (San Dieguito) (12,000 to 7,000 before present [BP])

The Paleoindian period experienced profound environmental changes, as the cool, moist conditions of the Pleistocene (from 2.5 million to 12,000 years ago) gave way to the warmer, drier climate of the Holocene (from 12,000 years ago to present). The earliest record of habitation in eastern Riverside County occurred during the Paleoindian Period. Locally, a fluted point base was recorded on the western bajada of the McCoy Mountains in 2012. Western Fluted Points post-date most eastern fluted points by several centuries but are likely at least 12,000 years before present. A result of the Solar development near Ford Dry Lake yielded several Lake Mojave Points (BLM 2010). In the Pinto Basin (Joshua Tree National Park) Elizabeth Campbell documented a fluted point base in 1935 (Campbell 1935). In the Colorado Desert, at the Salton Sea Test Base sites situated on the bed of ancient Lake Cahuilla some 30 m below sea level, a flaked stone assemblage was discovered that included points and artifacts diagnostic of the Early Holocene era and typological affiliation with the San Dieguito or Lake Mojave Complex. Two eccentric crescents and a Lake Mojave dart point, identified during surveys of this area, attest to early cultural activities in the region (Apple et al.1997; Wahoff 1999). Significant environmental changes, synchronous with broad shifts in regional temperature, occurred in the post-Pleistocene, with only minor changes in precipitation. Increased runoff from glacial melting resulted in the infilling of valleys and basins forming streams, marshes, and lakes. Initially these large bodies of water supported great amounts of biota, including big game animals (e.g., deer, pronghorn antelope, and bighorn sheep).

The San Dieguito archaeological assemblage consists exclusively of flaked stone materials, including percussion-flaked core and flake tools, crescents, domed and keeled choppers, planes, and scrapers. Other artifacts within the assemblage include less intensively flaked spokeshaves; leaf-shaped points; and large, stemmed lanceolate dart points of the Lake Mojave and Silver Lake types. Groundstone artifacts are characteristically rare or completely absent from the assemblage (Warren and Crabtree 1986). Studies of the sources of toolstone found at sites dating to this period attest to a pattern of relatively high residential mobility. Aboriginal settlements during this time coalesced around bodies of water and were especially frequent in association with large inland lakes. These aboriginal campsites exhibited a wide array of formal stone implements thought to be reflective of a specialized focus on hunting. Studies of the faunal remains discovered in prehistoric sites dating to this timespan in the Mojave Desert have revealed a broader spectrum subsistence pattern, including the procurement of many smaller game animals. Hence, lifeways during this time may have included a focus on highly ranked resources such as large mammals, but with the additional focus on a variety of small game.

Archaic Period (Pinto and Amargosa) (7,000 to 1,500 BP)

The climatic patterns of the late Paleoindian period continued into the early Archaic period. During this period, the climate was wetter than it is currently across much of the desert west (Antevs 1955; Grayson 1993; van Devender and Spaulding 1979). Regional populations during this era were generally expanding, leading to a diversification and intensification of subsistence, and regional communication and exchange networks were becoming well established. Groundstone tools, largely absent during the earlier occupation periods, become common during the Archaic. Archaic sites are typically identified by their diagnostic dart points (classified as members of the Pinto, Elko, and Gypsum series) and their lack of the pottery found only with later prehistoric sites (Crabtree 1980; Rogers 1939). Pinto points have been the subject of intense study, and much has been made concerning their typological affinities and dating. Pinto points

have, until recently, been thought to date from 8000 to 4000 cal. B.P. However, recent research suggests that at least two traditions, an early and later dating expression, are represented and evidenced by robust and gracile versions of these point forms (Basgall and Hall 2000). It is also probable that Pinto points do, in fact, have considerably greater temporal overlap with Western Stemmed Series (Lake Mojave and Silver Lake) points and date, in part, to a much earlier time period than originally conceived. The latter supposition is based largely on the nearly identical suites of obsidian hydration readings made on Pinto and Western Stemmed Series (Lake Mojave and Silver Lake) points in the Mojave Desert (Gilreath and Hildebrandt 1997).

Late Prehistoric (Patayan Complex) (1,500 to 150 BP)

A period of even more persistent drought began by 1,500 years ago, and conditions became significantly warmer and drier (Jones et al. 1999; Kennett and Kennett 2000). The dry period continued until 750 years ago (Spaulding 2001).

Prehistoric sites dating to the Late Holocene era in the Colorado Desert are more frequently represented during the Late Prehistoric (also known as Yuman, Patayan, Hakataya) than any other time period. This period is marked by significant changes in the archaeological record, including shifts in subsistence practices and settlement patterns. Paddle and anvil pottery and floodplain farming first appear during this era, and it is believed that both practices were introduced either directly from Mexico or indirectly via the Hohokam, situated on the Gila River, in the American Southwest (McGuire and Schiffer 1982; Rogers 1945; Schroeder 1975, 1979). The bow and arrow is also introduced during this time, and is evidenced by Cottonwood and Desert Side-notched type points. Burial practices change from the former practice of inhumation to cremation. Flaked stone tools during this era are more perfunctory—being quickly fashioned and discarded after casual use—a radical shift from the former tradition of crafting more formalized and finely finished bifacial tools.

It is important to recognize that there is a definite correspondence between the indigenous Native Yuman cultures of the region and the archaeological complex known as the Patayan. The latter include the historically attested peoples identified as the Quechan, Mojave, and Halchidoma. Although not affiliated with the Yuman linguistic group, the Desert Cahuilla (Takic subgroup) and the Chemehuevi (Numic subgroup) are members of the large and widespread Uto-Aztecan language group, and are also part of this same cultural landscape. The Patayan cultural materials and archeological assemblage are recognized as directly ancestral to the contemporary Native American cultures of the region.

Harold S. Colton (1945) attempted to apply the direct historical method to define the cultural pattern for the Patayan region. Using surface collections of pottery, he suggested that the historical practices of intense warfare known for the area extended back into the late prehistoric. Colton opined that this situation had been fostered by high population concentrations of agriculturalists tied to the Colorado River and confined by the adjacent arid environment. Rogers' archaeological work in the area (1936, 1945) introduced an orderly cultural history and artifact typology to the Colorado Desert, but conflated the late prehistoric record with a single linguistic grouping, tying it to the moniker Yuman.

Expanding on Rogers' Yuman pattern, Albert H. Schroeder (1961) introduced the concept of the Hakataya. Schroeder's efforts linked Rogers' ceramic types with historically identified ethnolinguistic groups correlated with specific subdivisions of the Hakataya pattern. The effort has been criticized as being too all-inclusive and for overlooking the mobility patterns

characteristic of the region (McGuire and Schiffer 1982). Yet the Patayan tag seems to have re-emerged with the publication of Hohokam and Patayan (McGuire and Schiffer 1982), which provides a critical review and history of the confusing terminology and varied cultural concepts applied to the region. Michael R. Waters (1982a, 1982b) used the Patayan label for his revisions to the local ceramic typology and chronology, and based his interpretations on Rogers' unpublished notes and a review of the artifact collections curated at the San Diego Museum of Man.

By the late Prehistoric period there appears to have been a transition to more mobile patterns of travel and trade between the Colorado River and Lake Cahuilla (Pendleton 1984). Long-range travel for resource procurement and trade resulted in a system of trails through the Colorado Desert. The increased mobility along the trail system allowed the opportunity for interaction between neighboring tribes. As the Spanish began to explore the area, native trails and trade routes were used and expanded.

Early research in the area noted recognizable trail types, including major long distance, minor long distance, and subsidiary trails between settlements and resource areas (Rogers 1941). McCarthy (1993) defines two types of trails, primary and secondary. Primary trails are based around a destination that is fixed on the landscape, such as a spring. A vital trail within the Project vicinity is the Coco-Maricopa Trail. One of the segments is just north of the Project area (Lerch et al. 2016). This heavily traveled east-west trail connected the Los Angeles Basin with the Colorado River at Palo Verde Valley and then continued east to Maricopa villages on the Gila and Salt rivers in the Phoenix vicinity. The California portion of the route went from the vicinity of modern-day Blythe, south through the Palo Verde Valley area, then curved south around the Palo Verde Mountains. This route then headed west along Milpitas Wash and Arroyo Seco along the north side of the Chocolate Mountains. It then passed south of the Orocopia Mountains and into the Coachella Valley and west over San Gorgonio Pass into the Los Angeles Basin. The portion of the trail that went east from the Coachella Valley to Arroyo Seco is followed today by what is known as the Bradshaw Trail. Garcés, writing in 1774, mentioned that the Halchidhomas in the Palo Verde area traded continuously with groups on the Pacific coast, and the trip took four days (Bolton 1930:242; Forbes 1965:109). Captain Jose Romero used the trail in the early 1820s to reach the Colorado River (von Till Warren and Roske 1981:2). Trade goods transported along the trail included gourd rattles and tobacco, and villages along the trail included those at Blythe, Mecca, Indio, Indian Wells, Palm Springs, White Water, and Cabazon (Norris and Carrico 1978:7). As noted in Bean and Toenjes (2010), the physical location of the entire Coco-Maricopa Trail is not known and only a few short segments have been recorded, based on earlier surveys (Johnston and Johnston 1957).

Ten prehistoric or historic trails are documented within the proposed Project solar facility site or within the vicinity of the Project. Three prehistoric trails fall within the Project boundaries; these include two previously documented trails, CA-RIV-343 (P-33-000343) and CA-RIV-772 (P-33-000772) and newly recorded CA-RIV-12012. The trails typically measured 15 to 30 cm wide and were identified by compacted sediment. CA-RIV-343 goes from the Palm Springs area to the Mule Mountains. It crosses through the southwestern portion of the Project area and heads toward the Mule Tank Discontiguous Rock Art District. CA-RIV-772 is visible on the south side of the Project. It leads to an intaglio site, P-33-000773, and is thought to be a part of the Coco-Maricopa Trail system. The new trail segment, CA-RIV-12012, is located in the central portion of the Project. It is not yet associated with any landscape features or artifacts (Lerch et al. 2016).

The Xam Kwatsan Trail traverses south from the Project area along the eastern slopes of the Mule Mountains. This trail is in the process of recordation. Ethnographic studies within the Project area have identified trails as having an important economic and spiritual use in both prehistoric and historic times (Bean and Vane 1978).

Other trails lead toward canyons containing temporary water sources. In addition to water sources, other resource areas would include lithic quarries and assay areas. A line of pebble terraces line the southern flank of the McCoy Mountains. Several extremely large prehistoric lithic sources and assay sites have been recorded in these terraces. Trail segments between these sites have been documented. McCarthy speculates shorter trail segments in the area of McCoy Wash were used to connect specialized activity areas within larger habitation areas (McCarthy 1993).

This trail network connected not only major pilgrimage locations, but also villages, springs, and important resource collection areas. The trails in the McCoy Wash area were believed to connect the region to important spiritual locations north of the Maria Mountains (near the Blythe Intaglios); the Colorado River; pilgrimage locations in the Mojave Valley and near Yuma; and villages throughout the region, including village sites in the study area (see above) and elsewhere in the Chuckwalla Valley.

The Salt Song Trail is considered to be the path to the afterlife used by the Chemehuevi, Southern Paiute, and Hualapai. The Salt Song Trail is described in the Salt Songs, which are a series of songs sung at funerals. According to WCR (2003:71), the Salt Songs tell of a flock of many species of birds traveling around the territory of the Southern Paiute, including areas in Nevada, Arizona, and California. Its alignment is described as:

> The trail goes southwest through the Las Vegas Valley, along the Spring Mountains to the vicinity of Indian Springs, and then proceeds through Pahrump and Ash Meadows. It turns back south near Eagle Mountain, and goes down the Amargosa River past Shoshone, turns again at Dumont Dunes, and goes up through Baker and Soda Lake, and passes south to the Providence Mountains. It then proceeds to Twenty-nine Palms and the San Bernardino Mountains, turns east toward the Colorado River, and crosses into Arizona south of Blythe [WCR 2003:71].

The path of the Salt Song Trail connects many of the culturally and spiritually relevant places throughout the Chemehuevi territory (AITC 1999:E-47). The Salt Songs take an entire night of mourning to recite and the path of the songs places the Spring Mountains at approximately the halfway point, with Las Vegas occurring around midnight, Parker by early morning, and the entire trip ending by sunrise. It is noted that it is important for the Salt Songs to end by sunrise and that the songs can be truncated to serve this purpose, but only by those singers who are familiar with the songs, the trail, and the landscape (Laird 1976:17).

Ethnographic Background

A number of distinct Native American groups have historical and cultural ties to the Project area and vicinity. The Project area is located near the territories of several neighboring Native American groups, as described in Kroeber (1925). The Chemehuevi, Cahuilla, Mojave, Quechan, and Halchidoma may have all ranged into the Project vicinity. The following brief synopses provide overviews on the ethnology for these ethnolinguistic groups.

Halchidhoma

It is difficult to find studies focused exclusively on the Halchidhoma, as they are typically addressed in scholarly studies focusing on other Colorado River and American Southwest Tribes traditionally occupying nearby areas. The most extensive discussion is in Spier's (1933) ethnographic treatment of the Maricopa. Spier's primary consultant was a man named Kutox, who was himself of Halchidhoma ancestry and was 83 years of age during the 1929–1930 field season of anthropological fieldwork. Similarly, Harwell and Kelly's synthesis on the Maricopa (1983) provides some further limited, yet useful, information on the Halchidhoma. Other, more perfunctory and scattered, information on the Halchidhoma can be found in the works of Bean and Vane (1978), Castetter and Bell (1951), Coues (1900:423–430), Dobyns et al. (1963:112), Drucker (1941), Kelly (1972), and Kroeber (1925:802).

Juan de Oñate visited the Halchidhoma and recorded the name of this Native American group when he traveled to the eastern bank of the lower Colorado River near the confluence with the Gila River. He identified them as Halchedoma or Alebdoma (Bolton 1916:276; Ezell 1963; Hammond and Rey 1953). Garcés uses the name Halchedunes, Galchedunes, and Chidumas (Bolton 1930; Coues 1900). Miscopied forms of their identifier are Alebdoma (Hammond and Rey 1953) and the identification made by Hodge under the heading Alchedoma (Hodge 1907–1910). The Quechan name for the group is similar to the Halchidhoma self-identifier and perhaps means "those who turned or faced a different direction."

Bean and Vane (1978) identify the central Halchidhoma with the name Panya. Kahwan families, taking up residence in association with the Halchidhoma, north of the Quechan, self-identify with the Halchidhoma (Kroeber 1925:801). In the recent historic era, ca. 1980, the Lehmi community within the Salt River Reservation (especially those living at Laveen) are of Halchidhoma ancestry. These are the people referred to as the Lehi, Western Maricopa, or pipakves (Kelly 1972). They prefer to be identified as and call themselves pipa (meaning "people" in their Yuman language).

The Halchidhoma dialect is grouped with the River Yuman branch of the Yuman-Cochimi linguistic family. Three languages form this branch: Mojave, Quechan, and Maricopa. The Maricopa language grouping includes the dialects of Halchidhoma and Kavelchadom. Both of the latter dialects are now extinct. The Yuman linguistic group includes 10 distinct languages and other dialects, with native speakers living in Baja California, northern Sonora in Mexico, Southern California, and western Arizona. Yuman languages are identified by many linguists as members of a larger Hokan linguistic family.

Although no longer inhabiting the study area, the Halchidhoma lived along the Colorado River between Blythe and Needles, California, and above Parker, Arizona, until about 1825. Oñate identified eight villages on the Colorado River, south of the Gila River, with 160 homes and a population at the northernmost village alone approximating 2,000 people (Kroeber 1925:802). Relations were always tense and sometimes explicitly adversarial. The Quechan and Mojave drove out the Halchidhoma, forcing them to migrate to the east and replacing them with the Chemehuevi (Kroeber 1925:594). The Halchidhoma ultimately found good company with the Maricopa at the confluence of the Salt and Gila Rivers in southern Arizona (Kroeber 1925:801; Harwell and Kelly 1983:71).

Similar to other River Yuman groups who lived along the lower Colorado River, the Halchidhoma were horticulturalists who dry farmed and also followed a supplemental foraging

subsistence pattern. Their hamlets were large habitation spaces located on river terraces elevated above the floodplain. Villages were regularly relocated when the river changed course. Plantings were made after the floodwaters receded, and river terrace plots were seeded into 2- to 3-acre parcels.

When floods were at their peak, areas of the Palo Verde Valley and Cibola were inundated. As the flood waters declined during the summer, seed crops could be planted. Maize, tepary beans, black eyed beans (cowpeas), squash, and pumpkins were standard foodstuffs. Mesquite and screwbean harvests supplemented the horticultural efforts. Dense groves of these trees appear to have been characteristic of the Colorado River riparian forests. Mesquite pods could be eaten fresh from the tree but more commonly were harvested in July or gathered after falling to the ground. The pods were then milled into flour and processed using wooden mortars and pestles of wood or stone (Castetter and Bell 1951; Gifford 1931).

Seeds of the ironwood (*Olneya tesata*) tree were also regularly gathered. These seeds were removed from the tree, parched, ground lightly on a milling slab, and leached to remove the bitter taste. The ironwood seeds were also roasted and made into a meal that was fashioned into thin loaves and baked. Ironwood seed harvests were conducted during the fall. Also targeted were the seeds of the Palo Verde (*Parkinsonia microphylla*). These seeds were processed in a similar fashion to that of the ironwood plant. Neither plant was considered an especially desirable food source. However, both were drought-tolerant species that inhabited areas away from the river. Hence, these economic plants could have been especially important for providing food in years when the Colorado River crops failed.

The Halchidhoma represented another example of the lower Colorado River Yuman tribe that was known for their habits of extensive long-distance travel and trade. Anthropologists have documented that the Halchidhoma traded with the Cahuilla, Hualapai, Papago, and Pima people, and partnered with the Maricopa (Bean and Vane 1978). One of the more prominent travel corridors was known as the Coca–Maricopa Trail; that footpath leads west and southwest from the Colorado River near Blythe and runs to the Pacific Coast. (Dobyns et al. 1963:109). The Halchidhoma received Hopi cotton blankets from the Hualapai of northern Arizona and traded those to the native peoples along their travel routes.

Warfare was a prominent factor for the Halchidhoma, and frequent conflicts occurred with neighboring tribes (Bean and Vane 1978; Kroeber 1925). An alliance system included the Halchidhoma and, as allies, incorporated the Maricopa, Pima, Hualapai, Havasupai, Serrano, Cahuilla, Paipai, and Ipai. Adversaries to the Halchidhoma were the Mojave, Quechan, Kumeyaay, Chemehuevi, Southern Paiute, Yavapai, and Western Apache (White 1974). The Halyikwamia and Kamias were at times friends or adversaries. Warfare was conducted as a means of recognizing tribal prestige, maintaining religious values, gaining individual honors, and acquiring supernatural power (Kelly 1977:129–131). The opposing war confederations would fight collaboratively against common enemies; this included, at times, the Spaniards.

Today, the Halchidhoma are part of the Salt River Pima–Maricopa Indian community that is recognized as a sovereign tribe and is located in the metropolitan Phoenix, Arizona, area. This reservation is bounded by the cities of Scottsdale, Tempe, Mesa, and Fountain Hills. This Tribal community encompasses 52,600 acres. Two distinct backgrounds and cultures are joined within this single community composed of the Pima: Akimel O'Odham (river people) and Maricopa Xalychidom Piipaash (people who live toward the water). Maricopa is currently spoken by a few

hundred of the approximately eight hundred Maricopa living in Arizona. There is a language program in the town of Lehi in the Salt River Pima–Maricopa Indian community, where they refer to the language as "Piipaash" (Golla 2011). Approximately 12,000 acres are under cultivation in a variety of crops, including cotton, melons, potatoes, onions, broccoli, and carrots. Commercial development is reserved along the community's western boundary. The community owns and operates several business interests, including a golf course, financial services, gaming resort, recreational facility, and landfill.

Mojave

There is considerable published material on the Mojave. Primary ethnographic studies rely on the works of Castetter and Bell (1951), Kroeber (1902, 1920, 1925, 1948, 1972, 1974), Spier (1933, 1936, 1953, 1955), and Wallace (1947a, 1947b, 1948, 1953, 1955). An early overview and synthesis can be found in the work of Hodge (1907–1910). George Devereux was a prolific author and student of Mojave Indian culture, and published a number of articles on Mojave belief systems and psychology (Devereux 1937a, 1937b, 1941, 1942, 1948, 1950, 1951, 1956, 1957, 1961). Lorraine Sherer provides academic studies on various aspects of the sociopolitical organization of the Mojave (Sherer 1965, 1966, 1967; Sherer and Stillman 1994). Kenneth Stewart offers some early topical accounts on territory and subsistence, and the most recent overview of Mojave ethnography included in the Smithsonian's encyclopedic Handbook of North American Indians (Stewart 1947a, 1947b, 1947c, 1957, 1965, 1966, 1968a, 1968b, 1969a, 1969b, 1970, 1973, 1974a, 1974b, 1977, 1983a, 1983b). Historical data on the Mojave is reported by Euro-American religious and military men and found in works of Coues (1900), Ives (1861), and Whipple et al. (1855).

Most anthropologists identify this lower Colorado River tribe as either the Mojave or Mohave. The spelling was considered rather important, as the Mojave with a "j" was representative of a people and the Mohave with an "h" designated the geographical appellation. That is no longer the case, and some Mojave people prefer the same spelling as the place name. The name Mojave is derived from the Yuman words for three (homk) and mountain (avi). One of the national identifications was Hamakhava. Contemporary Mojave often refer to themselves as the Aha Makhav (aha meaning "water" and macav meaning "along or beside"); hence the designation "By the River" or Pipa Aha Macav (The People by the River).

The Mojave language is a member of the River Yuman branch of the Yuman-Cochimi linguistic family. The latter includes approximately 10 distinct languages and numerous dialects, and includes speakers from Baja California to northern Sonora in Mexico, and also has affiliated languages represented in Southern California and western Arizona. These Yuman languages are considered by some linguists to be members of a larger Hokan linguistic family. Structurally and lexically, the Mojave language is very similar to Quechan and Maricopa, but different enough to create difficulty in spoken communication between the tribes. The Mojave language has been influenced by long-standing connections with Upland Yuman language speakers, resulting in a sound shift dating to the 19th century (Golla 2011).

Native speakers of the Mojave language can be found in California and Arizona. A little more than 200 fluent speakers were tallied in the year 2000, with about 70 percent of the speakers living in Arizona and the remaining 30 percent living in California. Although the language has been in decline for many years, younger Mojaves are now being taught their ancestral language, and the number of fluent speakers is growing.

Mojave territory, according to the ethnographic literature, included both riverine and inland areas; their riverine settlement area was mainly north of the Bill Williams River up to the present Nevada border. This main area of Mojave occupation extended on both sides of the lower Colorado River from south of Davis Dam to Topock (Stewart 1983b:55). At one time, however, the Mojave also occupied Cottonwood Island farther to the north, and the Chemehuevi and Colorado valleys to the south (Stewart 1969a:257–276). The historical record indicates that the Mojave were encountered by the Juan de Oñate Spanish expedition as far south as the present Colorado River Indian Reservation in 1604 (Stewart 1969a:257–276) and that they intermittently controlled areas as far south as Palo Verde valley. Sherer (1965:5) describes their settlement area as follows:

> Their river holdings stretched from Black Canyon, where the tall pillars of First House of Mutavilya loomed above the river, past Avi kwame or Spirit Mountain, the center of spiritual things, to the Quechan Valley, where the lands of the Indians began. Translated into present landmarks, their lands began in the north at Hoover Dam and ended about one hundred miles below Parker Dam. Their tribal name was Aha macave, meaning the people who lived along the water (the river).

Three groups made up the Aha-Macav and lived on both sides of the lower Colorado River from Davis Dam in the south to Topock in the north (Kroeber 1925). The northernmost element of the Mojave nation was the Matha lyathum, who lived from Black Canyon south to the Mojave Valley. The Hutto-pah settled in the central Mojave Valley. The Kavi lyathum resided in an area south of Mojave Valley to south of the current city of Needles. In addition to the Mojave occupation of the river, ethnographic accounts and archaeological evidence show that groups of Mojave also occupied interior regions in both California and Arizona for extended periods of time.

There is evidence that the historic distribution of the Mojave did not have great time depth, and that there was much movement and realignment of the various Lower Colorado River tribes. The Oñate expedition encountered the Mojave far south of their historic distribution in 1604 (Stewart 1969a). Stewart (1969a) also noted that the Mojave extended their territory into the Chemehuevi and Colorado Valleys, and, from time to time, even controlled areas as far south as the Palo Verde Valley. Significantly, after the Halchidhoma exited the Parker-Blythe region during the period from 1825 to 1830, the Mojave took up residence in the area, but they ultimately returned to their central homeland in the Mojave Valley (Bean and Vane 1978).

Subsistence for the Mojave was dependent partially on agriculture, with crops such as maize, tepary beans, pumpkins, and melons forming the foundation of their diet. Maize was by far the most principal of all the crops, however, with a family typically clearing between 1 and 2 acres. Silt deposited by river overflows fertilized the fields, and women did most of the planting and cultivation (Stewart 1983b:58). These cultigens were supplemented with the collection of wild native plants, including honey mesquite, screwbean, and sometimes pinyon. Mesquite and screwbean plants produced seed pods that could be eaten green but were typically processed with a wooden mortar and a stone or wooden pestle. The pods could be stored for lengthy periods and the resulting flour was an essential staple within the diet. Additional subsistence activities included hunting and fishing. Spring was considered the preferred time to obtain game animals, and rabbits were taken with traps and communal netting. Fish was the most important protein source for the Mojave, with dip nets, drag nets, traps, and large basketlike scoops used to catch

fish out of the river (Kroeber 1925; Stewart 1957). Agriculture remains an important income source for the Mojave in the Fort Mojave and Colorado River Indian Tribes reservations.

Sociopolitical organization for the Mojave consisted of a true chieftainship with hereditary leadership in the male line. Farmland and individual mesquite trees were owned. Tribal organization was quite distinct, and the Mojave identified themselves as a national identity—thinking of their land as a country with an infinite array of places (Kroeber 1925). The total population of the Mojave in 1776 was estimated at 3,000 (Coues 1900) and in 1834 as 4,000 (Whipple et al. 1855). Their numbers dropped dramatically so that by the 20th century, fewer than 1,600 were identified. Contemporary residents of the Fort Mojave Indian Reservation numbered less than 1,477 in the year 2010. However, there were 8,764 residents of the Colorado River Indian Tribes Reservation in 2010, which includes members with Chemehuevi, Navajo, and Hopi ancestry.

The Mojave were noted for their physical stamina and ability as runners, and they participated in an elaborate and formalized long distance trade network. The Mojave exchanged goods as far east as the Hopi town of Oraibi in Arizona and as far west as the coastal Pacific villages of the Chumash. The well-known Mojave Trail was one of their principal trade routes. Mojave men would travel at night, with a typical journey to the coast from the Colorado River taking some 15 to 16 days (Bean and Vane 1978; McCawley 1996).

Mojave religious beliefs were especially well developed and emphasized a basic connection between the natural world and the world of the supernatural. Every Mojave was recognized as having an ability to connect with the spirit world through dreams, and this was the principal means of identifying their personal calling in life. In dream states, the Mojave identified a way of traveling and journeying back through time to the beginning of the world. During these travels, the Mojave would see important places and identify key geographical locations where certain important springs or mountains were situated.

Traditional Mojave religion places special emphasis on the experience of and interpretation of dreams, with dreams affecting nearly all facets of life and behavior. Stewart (1983b:65) states:

> Mohave religion featured an unusual conception of dreaming, which was in fact a pivotal concept in their culture as a whole, permeating almost every phase of Mohave thought and endeavor. All special talents and skills, and all noteworthy successes in life, whether in warfare, lovemaking, gambling, or as a shaman, were believed to be dependent upon proper dreaming.

Oral traditions of the Mojave people are generally rich with detail, with mythical occurrences commonly associated with identifiable places and landmarks. Mojave stories typically recount journeys and/or the transformation of mythical persons into animals or landmarks. Many stories are part of traditional song cycles, and the landmarks identified in the stories include those within traditional Mojave territory as well as places in the surrounding region (Kroeber 1925:756). This strong identification with the landscape of traditional Mojave territory continues today.

Additionally, Mojave tradition involves the naming of clans. Clan names were given by Mutavilya, The Creator, based on aspects of the natural world, including (but not limited to) the sun, rain, small birds, the coyote, prickly pear cactus, and the frog. According to oral tradition, each clan went in different directions from Avikwame (Spirit Mountain) after receiving their

name. Each clan has a song commemorating the journey and various encounters experienced during that journey.

The Mojave successfully resisted Spanish attempts at colonization and maintained traditional lifeways and political systems until the U.S. military gained control of the area in the 1850s. Subsequently, many Tribal members relocated to an area south of Parker in 1859. Additional Mojave settled there when the Colorado River Indian Tribes Reservation was founded in 1865. Many Mojave, however, remained in Mojave Valley. The Fort Mojave Reservation was founded there in 1870.

Today, many of the descendants of the indigenous Mojave reside on or near one of two reservations located on the Colorado River. The Fort Mojave Indian Reservation includes areas of California, Arizona, and Nevada. The reservation covers 42,000 acres, with its headquarters in Needles, California. Two Tribal casinos are operated on the reservation, and there are also a variety of recreational facilities and a resort.

The Colorado River Indian Tribes Reservation is composed of land in California and Arizona and is shared by the Mohave, Chemehuevi, Hopi, and Navajo nations. This reservation includes almost 300,000 acres of land and has business interests centering on agriculture, a casino, outdoor recreation, and light industry. The original Colorado River and Fort Mojave reservations were established in 1865 and 1870, respectively. Although the four combined groups are united within the Colorado River Indian Tribes Reservation and act as a single geo-political unit, each Colorado River Indian Tribe continues to maintain and observe its individual traditions, distinct religions, and culturally unique character.

Quechan

In a report to the Secretary of War relating to the challenges of creating Fort Yuma, Heintzelman (1857) provides some slight ethnographic information on the Quechan. However, Trippel's (1889) accounts form the earliest extensive treatment of Quechan lifeways, capturing the manner of Native American culture at the close of the 19th century. Forde (1931) presents the single most authoritative description of precontact Quechan culture by an anthropologist but lacks discussion of reservation life in more recent times. Bee (1963, 1967, 1970, 1981, 1982, 1983,) provides information on Quechan kinship organization, social and cultural changes, Tribal politics, and the impact of government programs on the Native American community. Most recently, Bee (1983) provides an updated overview and synthesis in a chapter for the Southwest volume in the Smithsonian's Handbook of American Indians. Castetter and Bell (1951) provide a thorough treatment of the horticultural methods and specific cultigens within the domain of Yuman agriculture.

In the 1940s, Halpern (1942, 1946, 1976, 1980, 1984, and 1997) conducted research with the Quechan, visiting their settlements and assembling further information on their language and kinship terminology. Returning in the 1970s, he amassed more data, specifically gathering oral history and material on folklore. Historical accounts by Spanish explorers and religious figures provide short accounts of traditional Quechan culture. The most detailed of these is the material provided by Pedro Font (1951). Fortunately, a significant number of these early historic accounts have been reassembled in a recent work by Forbes (1965).

The identifier Quechan is derived from the name the Quechan apply to themselves. It translates as "those who descended" (Forde 1931; Kroeber 1943). This descriptor references the native oral

tradition of the creation of the Quechan and their neighbors on the sacred prominence, a mountain known to them as Avikwame (also known as Spirit Mountain). Their name for themselves is variously expressed in other discussions in an abbreviated fashion as xam kwacan, meaning "those who descended in a different way." Alternatively, another translation is provided for these same words as "those who descended by way of the water." Formerly, anthropologists identified them as the Yuma.

The Quechan speak a language also known as Yuma and are members of the Yuman linguistic subfamily, a member of the broader Hokan linguistic stock. In 1980, it was estimated that there were fewer than 700 speakers of the language. It is the most documented of Yuman languages, with several published grammatical sketches, ethnographic texts, and vocabularies (Golla 2011). Hinton's 1994 survey estimated the number of speakers between 150 and 500, while Golla's research in 2011 estimated that Quechan was spoken by 150 to 200 of the 3,000 members of the Quechan Indian Tribe. The majority of Quechan speakers are older, but some younger people are now learning the language and working to keep their ancestral tongue alive. Fluency in this language retains high social prestige for its speakers, especially in ceremonial context. Although no current systematic attempt is made to teach the language in schools, Quechan culture courses are taught at a local high school that incorporate the language (Golla 2011).

Quechan territory is now divided by the states of Arizona and California and is located near the confluence of the Gila and Colorado Rivers. Their traditional territory ranged from Blythe in the north to the United States/Mexico boundary in the south. Significantly, the Quechan reservation lies within their traditional homeland. Four to six locations were identified as ethnohistoric Native villages, all situated along the lower Colorado River. These included Avi Kwotapai between Palo Verde Valley and Blythe on the west side of the river. Also, Xenu mal vax was another Native American settlement that was near the contemporary town of Ehrenberg on the east side of the Colorado River.

The Quechan subsisted mainly on domesticated cultigens, wild plant foods, and fish (Bee 1983; Forde 1931). They planted seeds in the rich silt of the Colorado River floodplain after its waters had ebbed, and did so routinely and regularly with little risk and high returns. In some instances, seeds were planted several times during the year. Maize and melons were February plantings. Adding to the mix were teparies, corn, watermelon, black-eyed beans, pumpkins, and musk-melons. Winter wheat was a postcontact addition and would be gathered just before spring floods. Wild grasses were also seeded in the less fertile areas of ground. Up to 20 percent of the Native American diet consisted of fish from the lower Colorado River, including razorback, sucker, pike minnow, and bony tail. These were harvested through communal efforts with seine nets when the river was low.

The fields were cared for by the extended family, with men performing the heavier weeding chores and women sowing seed and storing the harvest. Wild native foods were also gathered; the principal targets for these efforts were the seed pods of mesquite and screw bean trees. The pods were crushed and the pulp eaten. This ground material served as a base for flour, was formed into cakes, or steeped in water to fashion a beverage.

Quechan religious beliefs traditionally involved the acquisition of spiritual power derived from special dreams and continuing interaction with the souls of the dead. This dream power is bestowed by the first people, created by Kukumat (their Creator), but imbued with spiritual power through Kukumat's son Kumastamxo. Dream power was critical to success as a leader,

doctor, warrior, or religious specialist. Traditionally, the Quechan also had guardian spirits identified by the unique voices that spoke to them from time to time. Spirits and agents of the ancient ones, the first people, reside on the sacred mountain of Avikwame or other prominences in their territory. Only special speakers or singers had esoteric knowledge of religious matters. The singular collective Tribal ritual where these religious specialists held sway was the karuk. This Mourning Ceremony was fashioned to revere relatives who had passed away. The ritual was recognized as a reenactment of the original Mourning Ceremony following the Creator's death.

The learning of songs was—and continues to be—an important aspect of religious belief and practice. This included the learning of sacred songs, through dreaming, about the events that occurred at the time of the creation of the world. The singing of these songs by individuals was, and remains, a principal avenue of religious expression. The dreaming experience meant that sacred places could be visited, and the sacred landscape traversed, through dreaming rather than through conventional travel, although physical travel along trails to sacred places was also an important aspect of the religious experience. Travel on key Native American trails continues to be a cultural practice today to commemorate and experience traditional culture. The geography of sacred places related to the sacred song cycles of Yuman groups is a major cultural feature of the lower Colorado River region. Kroeber (1925:786) collected large quantities of information on places mentioned in Mojave song cycles, from as far afield as the Pacific Ocean and the Tehachapi Mountains, the Gulf of California, Tucson, and southern Nevada. Modern Quechan have stated that a similar geography of sacred places is important in their culture, but place names have not been compiled to the same extent.

The contemporary Quechan community is concentrated in the lands of the Fort Yuma-Quechan Reservation and has its main headquarters in Fort Yuma, Arizona. The reservation is approximately 45,000 acres and is located along the lower Colorado River in both Arizona and California just north of the United States/Mexico border. The U.S. Census tallied the number of residents on the Quechan reservation as 2,197 people in 2010. The economic basis for the Tribe consists of farming, a sand and gravel operation, recreational vehicle parks, a grocery store, a museum, a utility company, a fish and game department, and a resort/casino.

Chemehuevi

The name used by most anthropologists to identify this ethnolinguistic entity is Chemehuevi. However, this tag is of Yuman linguistic origin and was perhaps first applied by Father Garcés in 1776 (Coues 1900, 1:219, 224, 2:353, 444; Kroeber 1925:593). Such a moniker (Chemebet, Chemeguaba, Chemeguagua, and Chemegue) was most likely a term used by the padre's Mojave guides as a marker to describe a number of different Southern Paiute bands. Hodge (1907–1910, 1:243) identifies the term Tan'-ta' wats. Tan-ta-waits is also identified as an appellation by Fowler and Fowler (1971:156). Both terms mean "southern men" or "people who live in the south." The Serrano apparently identified the Chemehuevi as Yuakayam (Kroeber 1925:595), and the Quechan knew them as Mat-hate-vatch (Hodge 1907–1910, 1:243). The Pima recognized them by the name Ah'aalakat (Hodge 1907–1910, 1:242).

The Chemehuevi are the southernmost of 16 distinct groups of Southern Paiute speakers (Kelly and Fowler 1986). The latter groups all spoke a single language, with the various subgroups representing different dialectical divisions. These languages are members of the Southern Numic family of Uto-Aztecan linguistic stock. The Chemehuevi are distinct from their Southern Paiute

linguistic kin in that they borrowed heavily from their neighbors, the Mojave, and, hence, have, in some instances, similar subsistence and religious cultural elements.

The traditional territory of the Chemehuevi included a large area southwest of what is now Las Vegas, Nevada, and an enormous expanse of land within the eastern Mojave Desert of California. Halmo (2001:45) described the range of the Chemehuevi as:

> …territory that extended in the north from roughly (east to west) Indian Springs through Ash Meadows in Nevada to the Funeral and Black Mountains immediately east of Death Valley; the western boundary encompassed the San Bernardino Mountains and Barstow, and extended from (north to south) Death Valley and the Panamint Range to the western flanks of the Avawatz Mountains, just east of Soda Lake south to the western flank of the Old Dad Mountains, near to or encompassing Cadiz Dry Lake, to the Big Maria and Little Maria Mountains, and to the area around Blythe, California. In the east, Chemehuevi territory included alluvial floodplain lands east of the Colorado River and up along the Bill Williams River and northward….

Kroeber (1925:595) noted that this was the largest piece of land held by any single ethnolinguistic group in California, and was one of the most thinly populated Native American territories anywhere in the state. He estimates that between 500 and 800 Chemehuevi were living within their territory during the precontact era (Kroeber 1925:595). Californian ethnographers Lowell Bean and Sylvia Brakke Vane disagree with Kroeber's population estimate and argue that a minimum of 13,000 Southern Paiutes inhabited a territory from what is now Las Vegas south to Palo Verde Valley and from the Colorado River into the Iron Mountains (Bean and Vane 1978:5–20).

It appears that, throughout much of prehistory, the Chemehuevi practiced a foraging subsistence strategy. They were hunter-gatherers who moved seasonally, taking advantage of the differential availability of key economic plant and animal resources. Their territory was a vast desert biome, and so they located their more permanent settlements near reliable sources of potable water.

Upland hunting parties traveled to more distant areas (away from villages) to acquire bigger game animals, principally bighorn sheep and deer. Antelope and jack rabbits were also hunted communally with drives using lengthy nets and constructed diversion fences. The Chemehuevi also collaborated with neighboring tribes in the pursuit of large game. Hunting parties traveled to the San Bernardino Mountains for cooperative efforts with their allies, the Serrano and Vanyume.

The Chemehuevi, who the earliest Euro-American explorers came to know, were living on irrigated horticultural lands along the Colorado River. In this part of their territory, their numbers were greater and permanent villages existed. It appears that the Chemehuevi adopted this pattern of floodplain agriculture from the Mojave. Plants that were amenable to this type of agricultural practice and were grown by the Chemehuevi included gourds, winter wheat, yellow maize, and certain semi-cultivated grasses (Kelly and Fowler 1986:371). The collection of wild plants supplemented the Chemehuevi diet, including the collection of blazing star, chia, rice grass, goosefoot, pinyon pine nuts, and acorns. Communal hunting parties generally hunted rabbits, antelope, and mountain sheep, with deer, bear, mountain lion, water fowl, small rodents, fish, lizards, and some insects rounding out the menu of Chemehuevi protein sources (Kelly and Fowler 1986:370).

Material culture for the Chemehuevi was similar to other Californian and Great Basin hunter-gatherers. Prior to their expansion into the lower Colorado River area, they did not have or use pottery. The Chemehuevi had a well-developed tradition in basketry and were also well known for their recurved, sinew-backed bows (Laird 1976:6). The latter were especially accurate and powerful and exceptionally well suited for hunting large game animals such as deer and bighorn sheep. Bands of Chemehuevi, who lived away from the river and without horticulture, typically fashioned conical brush structures or dome-shaped residences that were covered with grass or bark. Bands living closer to their cultivated fields adopted the use of pottery and, when living nearer to the river, fashioned more substantial dwellings of wood and mud without a front wall (Kelly and Fowler 1986:371).

Historical accounts suggest that the Chemehuevi belief systems include a form of shamanism where power was bestowed upon a person through dreams. A prospective shaman would be visited in his dream by one or more guardians—usually in animal form—who would give him instructions, teach him songs, and bestow upon him shamanistic power (Kelly and Fowler 1986:383). The songs passed on through dreams were, and remain, of great importance culturally and include the Funeral, Deer and Mountain Sheep, Bird, Salt, Quail, and Coyote songs. These songs are generally descriptions of travels, complete with place names, important landmarks, natural phenomena, and environmental conditions (including the animals present). The recitation of important songs is common at Chemehuevi cultural events even today, again reflecting the importance of tribal history and tribal territory in modern Chemehuevi culture.

The Chemehuevi have a rich record of oral traditions, and their stories tell of the genesis of the world and emergence of their people from a place near Mount Charleston (*nuvant*)—the highest peak and a sacred place located near what is now Las Vegas, Nevada. As with much Great Basin and Mojave Desert mythology, Coyote is a principal figure in their stories and is a central divine being, an animal/human immortal responsible for providing the names of the animals, inventing agriculture, initiating various customs, teaching people about the bow and arrow, and training people on how to fashion pottery (Kelly and Fowler 1986:385). Coyote and his brother Wolf or Panther had their home at the beginning of the world on Charleston Peak (Kroeber 1908a; Laird 1984; Stoffle and Dobyns 1983; Stoffle et al. 2000; Sutton 1993).

The Chemehuevi borrowed and adopted certain cultural elements from their neighbors the Mojave, with whom they traditionally held rather amicable relations. Evidence of this is suggested by Chemehuevi language use. Chemehuevi speech has a number of Mojave loanwords and is often treated separately from the other varieties of Southern Paiute. All varieties spoken in the dialect chain from Chemehuevi to Northern Ute remain intelligible and constitute a single language, with the differences between these tribal groups considered social and cultural, not linguistic (Golla 2011). Nevertheless, there appears to have been a slight undercurrent of sometimes tense or adversarial interactions, and Kroeber notes that an armed conflict occurred between the Mojave and the Chemehuevi in 1867 (Kroeber 1925:594). It has generally been accepted by anthropologists that the Chemehuevi migrated into the Parker and Blythe area after the Halchidhoma left the area. However, other researchers (Roth 1976:81) believe that the Chemehuevi might have settled earlier in the Palo Verde Valley, before the out-migrations of the Halchidhoma.

Mojave tradition claims that the Chemehuevi were formally invited by the Mojave to come to the Colorado River after 1830. Other ethnographers claim that the Chemehuevi were residing at Cottonwood Island and in the Chemehuevi Valley prior to that date in the 18th century (Laird

1976:123). Kelly (1934:556) thought that the southern expansion of the Chemehuevi dated to the early 1800s. The recent historic and protohistoric population movements along the Colorado River are a subject of some continuing disagreement among anthropological scientists, historians, and the living descendants of the Chemehuevi and Mojave people.

The Chemehuevi lost their traditional lands to the U.S. government in 1853. A little more than a half-century later (in 1907), the Chemehuevi Valley reservation was established. The Tribe received formal Federal recognition and was reinstated in 1970. The Chemehuevi have a contemporary land base of 32,000 acres of trust land that incorporates 30 miles of Colorado River frontage. The descendants of the Chemehuevi live on the Chemehuevi Indian Reservation (population of 308 in 2010) and Colorado River Indian Tribes (CRIT) Reservation, as well as on several other reservations, including the Twentynine Palms Indian Reservation (located in Coachella, California). The Chemehuevi dialect is currently spoken on the Colorado River Indian Tribes Reservation at Parker, Arizona, and on the neighboring Chemehuevi Indian Reservation. Although the Arizona Chemehuevis have started a language-revitalization program, there are few materials and no agreement on orthography. Currently, fewer than 20 first-language speakers are found on all reservations combined (Golla 2011). A Chemehuevi dictionary by June Leivas has been published as a part of the mitigation for the Genesis Solar Energy Project, and is available through the Chemihuevi Tribe.

Cahuilla

The Cahuilla call themselves Ivitem or Iviluwenetem. This means "people who speak iviat or iviluat." The name used by anthropologists, Cahuilla, is of uncertain origin but might be from their own word for boss or master, kawiya. Their neighbors, the Cupeño, call the Cahuilla the wolves in their language, which is one of their clans. The Cupeño also refer to the Cahuilla as the people of the east. The Luiseño identify them as "the easterners" in their language. Other names for the Cahuilla that have been applied are Cowela, Cowillas, Dancers, Danzarines, Gecuiches, Hakwiche, Jecuches, Jecueche, Jecuiches, Kahuilla, Kahweaks, Kah-we-as, Kahweyahs, Kauvuyas, Kau-yai-chits, Kavayos, Kavwaru-Maup, and Koahualla, as well as Tecuiche (Hodge 1907–1910, 1:669), Cahahaguillas (Bean and Mason 1962), and Coahuillas (Barrows 1900).

The Cahuilla language is a member of the Cupan subgroup of the Takic family of Uto-Aztecan stock. There are four members of the Cupan subgroup, and Cahuilla is more similar to Cupeño than to Luiseño. The territory of the Cahuilla covers much of central Southern California and includes the inland valleys of western Riverside County across the San Jacinto and Santa Rosa Mountains and into the Coachella Valley and the northern Colorado Desert. The Cahuilla landscape included the territory from the Orocopia Mountains in the east to San Gorgonio Pass and the area near the City of Riverside. Anthropologists have subdivided the Cahuilla into three geographical divisions: the Mountain, Pass, and Desert Cahuilla. The Desert Cahuilla lived closest to the study area. This subgroup focused their activities in the region of the Coachella Valley, Chuckwalla Valley, and areas west of the Colorado River.

Although dialectical differences existed between the three communities of Cahuilla, these differences did not prevent mutual understanding and intelligibility, and the communities maintained social and ceremonial ties with one another. The Cahuilla language is very well documented and grammars, dictionaries, and collections of narrative texts are available. Though there are no longer any speakers of Pass Cahuilla, there are five native speakers of Mountain Cahuilla as of 2004, and a dozen or so speakers of Desert Cahuilla. The Malki Museum at the

Morongo Reservation in Banning has played an important role in language preservation and provides visitors with extensive information about the Cahuilla language (Golla 2011).

The Desert Cahuilla gathered wild plant foods from the lowland environments and emphasized mesquite, screwbean, cactus fruit, and hard seeds (Bean and Vane 1978:578). It has been suggested that the desert groups retained access rights to upland environments as well. Precontact Cahuilla subsistence/settlement patterns appear to have incorporated village sites situated near a reliable source of water. These hamlets were occupied year-round by a single lineage group. Springs and resource patches might be owned by a specific lineage. Additionally, by 1824, the Desert Cahuilla were practicing irrigation agriculture and growing foods similar to the Colorado River Yuman groups. Those foodstuffs included maize, beans, squash, pumpkins, melons, and wheat.

Traditional subsistence patterns involved the movements of parts of the Cahuilla community to areas where they would collect and harvest plant resources as they became available. The agave, yucca, mesquite, cactus fruit, and certain grass seeds were targeted. As occasions allowed, the Cahuilla also hunted various game animals. Rabbits, deer, and bighorn sheep were favored quarry. Upland excursions were focused on harvesting key nut crops, including acorns and pinyon nuts. Both nut crops were storable and could last for many months.

Basketry arts were well developed and coiled wares of four types were fashioned: flat plates, food bowls, pack baskets, and storage containers. Stone mortars, pestles, and milling slabs; bowls of willow or mesquite, arrows; charmstones; bull-roarers; clappers; rattles; feathered headdresses and skirts; sandals; women's skirts; and rabbit skin blankets were included in their material technology.

The Cahuilla recognize the universe as an interacting system, and saw people as an important part of that world. However, they also respected the existence of powerful supernatural beings that were active in the affairs of the Tribe. Soul spirits inhabited the living and yet had another existence after a person's death. These spirits would travel to the land of the dead and this was the place where the first people lived. Messages from these spirits to the living aided those here on Earth.

Many rituals were prominent in Cahuilla life, and both Strong (1929) and Bean (1972) have identified at least 10 or more types of rituals. The most important of these ceremonies were the annual mourning ceremony, eagle ceremony, rites of passage (particularly birth, naming, adolescent initiation, and marriage), status changes of adults, and increase rites (inducing supernatural beings to provide increased number of animals or plants ensuring an adequate and abundant food supply). The emphasis in many of these rituals was the performance of song cycles, setting the place of the Cahuilla in the universe and affirming the relationship of the past to the present, one to another, and to all things.

Cahuilla leaders Juan Antonio and Cabeson, among others, acted as negotiators for the treaties between the Cahuilla and the U.S. Government in 1851. Reservations were established for the Cahuilla in 1875 and they were able to maintain their traditional patterns in combination with wage labor until about 1891, when Federal supervision of the 10 Cahuilla reservations increased. This supervision included enrollment in government schools and cultural suppression of traditional Cahuilla lifeways. Today, Cahuilla reside on eight different reservations in and around the San Jacinto Mountains and Coachella Valley.

Agua Caliente Band of Cahuilla Indians. The Federally recognized Agua Caliente Band of Cahuilla Indians was granted land at Tahquitz Canyon, Riverside County, in 1876. From 1891 until the 1930s, Indian Service (Bureau of Indian Affairs) personnel lived on-reservation and closely controlled tribal politics. The Indian Reorganization Act of 1934 gave more political autonomy to the Cahuilla, permitting, among other rights, the authority to reestablish tribal governments. Currently, the tribe is based out of Palm Springs, California, and its members constitute the largest single landowner in Palm Springs. The Agua Caliente Band is governed by a tribal council consisting of a chairperson, vice-chairperson, secretary/treasurer, and two council members. The council members are elected by the tribe, and elected members appoint four proxy members. The tribe maintains a cultural resources department directed by a Tribal Historic Preservation Officer. The tribe has numerous business ventures including the Agua Caliente Casino, Resort and Spa in Rancho Mirage; the Spa Resort Casino in Palm Springs; a golf resort, and real estate.

Augustine Band of Cahuilla Indians. The Augustine Tribe and their Reservation are both named after Captain Vee-Vee Augustine, a Cahuilla leader born in 1820. There were at least 22 village sites noted by early explorers in the Coachella Valley, one of which ended up being the Augustine Reservation. The Reservation was established by Congress in 1891 at the Temal Wakhish village site near Thermal, California. In 1972 there was only one last surviving member of the tribe, Roberta Augustine the great-granddaughter of Captain Augustine. Roberta had three children who, along with their descendants, constitute the official tribal membership today. This Federally recognized tribe is based out of Coachella, California, and is governed by a tribally elected chairperson. Economic ventures for the tribe include the Augustine Casino, and the Augustine Solar Energy Park, a 1.1 MW solar photovoltaic (PV) plant at the Augustine Solar Energy Park built on reservation land.

Cabazon Band of Mission Indians. The Cabazon Reservation was established in 1876 and is a Federally recognized tribe based in Indio, California. The primary economic resource on the 1,153 acre reservation is agriculture. As Mission Indians, the Cabazon Reservation associates and interacts closely with the network of other reservations of Mission Indians in the region. The tribal government of the Cabazon Band of Mission Indians consists of five tribally elected officials; a chairperson, a vice chairperson, a secretary/treasurer, a liaison/general counsel, and a member at large. Elections are held every four years for these positions. The tribe employs a cultural resources director to handle cultural resource issues. The Fantasy Springs Casino and Resort in Palm Springs is operated by the tribe.

Cahuilla Band of Mission Indians. The Cahuilla Indian Reservation is located about 25 miles east of Temecula and 35 miles west of Coachella Valley, based out of Anza. The Federally recognized reservation was established in 1875 and today consists of about 60 homes on 18,884 acres of land. There are currently 325 enrolled Cahuilla members. The Cahuilla tribal government consists of a five-member tribal council elected by the general membership. The Council consists of a tribal chairperson, a vice chairperson, a secretary, and two council members. In addition, various tribal committees are appointed to address specific government functions within the tribe. Major sources of income for the tribe include the Cahuilla Casino, the Cahuilla Travel Website, and the Cahuilla Smoke Shop. In addition, the tribe has recently allocated 2,000 acres for future economic development, including renewable energy development, commercial warehousing, and a gas station/convenience store.

Morongo Band of Mission Indians. The Morongo Reservation was established in 1876, and is located in Banning, California. Members of the reservation are of the Serrano, Cupeño, and Cahuilla groups. In terms of area, at 35,000 acres, the Morongo Reservation is the largest of the Cahuilla reservations. The Morongo Band of Mission Indians is a Federally recognized group governed by a tribal council consisting of a chairperson and vice chairperson, as well as five council members. The tribe is the largest private-sector employer in the Banning region, and its economic resources include agriculture, cattle, recreation, the Four Diamonds Resort, the Morongo Casino Resort and Spa, restaurants, and a golf course, among other businesses. The tribe maintains a cultural heritage program to promote the tribe's history, language, and connection to the land.

Ramona Band of Cahuilla Indians. The Ramona Indian Reservation was established in 1893 at the base of Thomas Mountain, in Anza, California. In 1970, there were only two members of the tribe, neither of whom lived on the 560-acre reservation. The members of the Ramona Tribe are direct descendants of the Apapatchem clan, known as the "Medicine People." The reservation is located in the area where historically this clan gathered food, water, and medicine, and held spiritual ceremonies and celebrations. The tribal government of the Federally recognized Ramona Band of Cahuilla Indians consists of a tribally elected tribal chairperson and vice chairperson. One of the major economic vehicles for the tribe is the Ramona ecotourism project. This is a Department of Energy funded project to develop renewable energy projects in remote locations. The tribe will be one of the first "off-grid" reservations, using wind, solar photovoltaic/propane generator hybrid systems to generate between 65-80 kWh/day to power the reservation's housing, offices, and business ventures.

Soboba Band of Luiseño Indians. The Federally recognized Soboba Indian Reservation was established in 1883 on a 3,172-acre parcel that included the village of Soboba. A non-Indian individual also claimed ownership of some of this land. After several legal battles, the private land was purchased by the Federal government and was then held in trust for the people of the Soboba band by the Department of the Interior. Today the Reservation encompasses almost 7,000 acres and there are about 1,200 enrolled tribal members. The Soboba Indian Reservation is located in San Jacinto, California. The Tribal Council consists of a tribally elected chairperson, and a vice chairperson, a secretary, a treasurer, and a sergeant-at-arms who are elected by the Tribal Council.

Torres-Martinez Desert Cahuilla Indians. The Torres and Martinez Reservations were established independently in 1876. Later, under the Relief of Mission Indians Act of 1891, these two reservations were combined. The Federally recognized Reservation encompasses about 18,223 acres near Thermal, California. The tribal government of the Torres Martinez Tribe consists of eight tribal council members who are elected by the general membership. The Council members consist of a chairperson, a vice chairperson, a secretary, a treasurer, and four non-office holding members. The tribe employs over 150 people in positions within various tribal departments (e.g., accounting and finance, environmental protection, planning, security), and owns and operates the Red Earth Casino.

Historical Background

European exploration of the Colorado Desert began in 16th century, but sustained Euro-American settlement of the region did not occur until the mid-19th century. This extended period

of exploration without expansion creates a long Proto-historic period in the region, during which Europeans and local Native American groups knew of one another but interacted very little. This time period is discussed above from the point of view of Native American history. Below, the Euro-American expansion into the region and subsequent historical developments are described.

European Exploration

By 1539, the Spanish had begun to explore parts of what they named Alta California. Early explorers such as Francisco de Ulloa (1539), Hernando de Alarcon (1540), and Francisco de Coronado (1540) led expeditions into the Gulf of California, reaching the mouth of the Colorado River and continuing up the river past the Gila confluence. However, little exploration of the interior deserts was undertaken until much later. Spanish exploration of the interior deserts for the next 200 years was intermittent, as the region was considered desolate, remote, and filled with staunch indigenous adversaries such as the Mojave and Quechan.

The first recorded explorer of the interior Colorado Desert region was Father Eusebio Francisco Kino, a Jesuit missionary, cartographer, and explorer. Starting in 1691, Kino established a string of missions in northern Mexico and southern Arizona, finally reaching the Colorado River in 1702. Almost 70 years later, Father Francisco Garcés followed Kino's route, reaching the villages of the Quechan at the junction of the Gila and Colorado Rivers in 1771. Garcés's party crossed the Colorado River and traveled west through the desert until they could see the San Jacinto Mountains in the distance, before returning to Sonora. Three years later, Father Garcés and a Spanish border captain named Juan Bautista de Anza attempted an overland route to Monterey. When they reached the Colorado River, Anza found the local Quechan to be surprisingly friendly. The Quechan assisted the Spanish in fording the river, locating wells and trails, and ultimately rescuing an exploring party lost in the desert. In the 1800s, most of the travel from Arizona to central California followed Anza's route.

Transportation

Sustained economic development in the Colorado Desert region only began in the 1870s, and came to fruition in the early part of the 20th century. Development was dependent largely on two things: transportation and water. The first of these came in the form of a series of overland trails and stagecoach lines created to service the emerging mining towns. Early in the 1860s, Hank Brown and John Frink independently developed routes to access the gold mines in the vicinity of La Paz, Arizona (von Till Warren et al. 1980). Frink's route was an east/west road established as an alternative to the more southern Butterfield Stage. This was apparently the first development across the Palo Verde Mesa, although it has since all but disappeared (von Till Warren and Roske 1981:17–18). In 1862, William D. Bradshaw opened a route, later known eponymously as the Bradshaw Trail. This route crossed the desert to the La Paz mining district. Bradshaw also operated a ferry across the Colorado River near Providence Point, opposite a small community that would become Ehrenberg, Arizona.

Bradshaw developed his road partly along Brown's and Frink's previous routes, although Bradshaw's trail headed more directly east from the Salt Creek Pass to the southern slopes of the Orocopia and Chuckwalla Mountains. Bradshaw, like the majority of early trailblazers, used Native American routes that predated Spanish exploration. Part of Bradshaw's Trail may have been the Coco–Maricopa Trail, which intersected the Colorado River near Blythe. The Bradshaw Trail, like many other cross-country routes, became largely obsolete with the arrival of rail service in the desert and the depletion of the La Paz gold fields in the late 1870s. The railroads

reoriented the development of trails and wagon roads that connected new mining communities to major routes of transportation. Railroad stops became destinations for wagon roads, allowing points of access to develop the remote desert interior (von Till Warren et al. 1981).

The first railroad came to the Colorado Desert in 1877, with the construction of the Southern Pacific Railroad. The Southern Pacific line began on the west coast and reached Yuma on September 30, 1877. The railroad was the single most important boost to mining in the southeastern Colorado Desert, offering convenient transportation of heavy mining equipment, supplies, personnel, and, when the miners were lucky, bullion. By 1880, the Southern Pacific Railroad was providing access to new gold and silver ore deposits in the Chocolate Mountains, Cargo Muchacho, and Palo Verde Mountains. Water remained a scarce resource in the desert, with most water for mining enterprises coming from highly localized sources such as springs, wells, and streams.

Mining

After the Treaty of Guadalupe-Hidalgo in 1848, the United States took control of the U.S. Southwest in the same year that gold was discovered in California. Mining camps were established in the desert as early as 1850, with the beginning of gold mining at Salt Creek in the Amargosa Desert. Along the eastern bank of the Colorado River, the town of La Paz, once known as Pot Holes, developed when gold was discovered nearby. The subsequent mini-gold rush in the area made La Paz an instant boomtown whose population peaked at 1,500 in the 1860s (Wilson 1961:25). Along the stage line between San Bernardino and the Colorado River, La Paz was an important stop, serving as the county seat for Yuma County until 1870 (Thompson 1985). The La Paz mining district yielded placer gold for only a short period, though, and by the end of the 19th century, La Paz passed from boomtown to ghost town.

The first Euro-Americans to arrive in the Colorado Desert in any numbers were prospectors hunting for the next big gold strike. Regionally, mining and prospecting activity was most intense in the mountains and high deserts of the Mojave, but small-scale mining has been a consistent feature of the Colorado Desert from the 1800s to the present day. By 1863, between "2,500 and 3,000 [Euro-]Americans and Mexicans were on the river between Palo Verde Valley and El Dorado Canyon," most of them engaged in mining (Poston 1863:387, cited in Bean and Vane 1978:5–21). Generally speaking, mining productivity in the Colorado Desert was greatest between 1890 and 1910, with a brief resurgence during the Great Depression in the 1930s, when a hard-scrabble existence in the desert seemed preferable to unemployment in the cities (Morton 1977; Rice et al. 1996). In the vicinity of the Project area, manganese and gypsum mining were particularly intense during the initial years of World War I (WWI) and World War II (WWII), when other mining activities were reduced or curtailed entirely.

In the 1820s, limited placer mining began in the eastern Colorado Desert. In the early 1800s, prospectors were some of the only Euro-Americans traveling in the California deserts, and they frequently came into conflict with Native American groups. From the 1840s through the 1880s, the U.S. Cavalry established a series of camps and forts throughout the Arizona, Nevada, and California deserts to protect settlers and immigrants from the often hostile tribes whose territories they were invading. In 1848, the discovery of gold at Sutter's Mill brought a tremendous influx of Euro-American and European settlers to California. Between 1849 and 1860, an estimated 8,000 emigrants crossed the Colorado Desert on their way to California (Laflin 1998:10). In the 1850s, some would-be miners tried their luck in the eastern Colorado

Desert, but found very little gold. Most miners simply passed through the desert on their way to the larger strikes to the west and north.

By the early 1900s, the glory days of mining were over. In the Palo Verde Valley area, mining remained a relatively small part of the economy, never becoming the economic boon that early town planners might have hoped. Several modestly successful copper mines such as the Crescent Mine and Smith-Hopkins Mine were located in the northern McCoy Mountains, but the less-glamorous gypsum and manganese deposits became more important in the region. In the northern extent of the McCoy Mountains, several mines produced significant quantities of manganese, the ore being used to harden steel for armaments (Butler 1998:44; Shumway et al. 1980:44). During WWI, the Blackjack Mine employed one to two dozen men at a time to extract 45% pure manganese ore, which was shipped east for use in armament factories. A brief mention of the mine in the Blythe Herald optimistically proclaimed the "outlook" at the Blackjack Mine "unusually good" due to the inflated war-time price of manganese ore (Blythe Herald, October 11, 1917). With the end of the war in 1918, though, the price of manganese fell to pre-war levels, and manganese mines lay largely dormant until the onset of WWII in the 1940s.

When the United States formally entered WWII, manganese mines in the McCoy Mountains became active once again. Of the dozen or so manganese mines active in the vicinity of the McCoy Mountains north of Blythe during WWII, the largest was the Arlington Mine along the northeastern flank of the McCoy range (Shumway et al. 1980:44). From 1942 to 1945, the Arlington Mine shipped roughly 8,500 tons of ore via the Santa Fe Railroad at the Inca (Cox) siding (Shumway et al. 1980:44; see also Palo Verde Valley Times, November 19, 1942, and June 24, 1943). In 1945, the government created new, more-stringent specifications for manganese ore that none of the McCoy deposits could meet, leading to a near total shutdown of the mines in a matter of months.

Homesteading and Agriculture

The passage of the Homestead Act in 1862 and the Desert Land Act in 1877 were instrumental in the settlement of the Lower Colorado River area. The Homestead Act offered the opportunity for United States citizens to file a claim on 160 acres or less of land for $1.25 per acre. The Act stipulated that the claim be for purposes of actual settlement and cultivation, and the claimant was required to "improve" the plot by building a dwelling and cultivating the land. After five years on the land, the original filer was entitled to the property (National History Day n.d.).

On the Palo Verde Mesa, agriculture remained a challenging pursuit due to poor soils and lack of water. These impediments, though, did not stop a few enterprising souls from attempting to raise plants and livestock on the land. The incredible success of the irrigated fields in the Palo Verde Valley surely encouraged expansion onto the inhospitable mesa. In 1929, the Palo Verde Mesa and Chuckwalla Valley Development Association proposed a large-scale irrigation project for the Palo Verde Mesa. The irrigation project was further explored in 1931, and the main project canal was proposed to follow a contour line around the mesa. Ultimately, the project did not come to fruition. In 1936, the Palo Verde Irrigation District proposed another irrigation project following the mesa contour lines and centered on the McCoy Wash within the Project. Several tracts of land were claimed as Homestead Entries and Desert Land Entries in the area. These were developed as part of the new Palo Verde Irrigation District. Despite high hopes and good intentions, most of the originally developed fields lay fallow now.

World War II Desert Training Center/California-Arizona Maneuver Area

Early in 1942, shortly after the bombing of Pearl Harbor and the U.S. entry into WWII, the Director of Army Ground Forces and Combat Training for the War Department, Lt. General Lesley J. McNair, ordered the creation of the Desert Training Center (DTC) in California, Arizona, and Nevada. The DTC was to be a training facility where U.S. troops could become acclimated to the rigors of desert fighting, and desert tactics and military equipment could be tested before the inevitable confrontation with the Germans in North Africa. General McNair believed in greater "realism in training," which he equated with "large maneuvers and live-fire exercises" of a kind rarely seen in U.S. military training up to that point (Gorman 1992:1). The DTC was, thus, also intended to function as an enormous mock theater of war in which McNair's ideas about "realism in training" could be put into action.

One man who shared McNair's abiding belief in training realism was General George S. Patton, Jr., who had only recently been placed in command of the first tank unit in U.S. military history, the 1st Armored Corps. Early in his military career as a cavalry man, Patton had observed first-hand the importance of large, realistic training maneuvers. In 1916, as part of the punitive expedition against Pancho Villa, the cavalry amassed in the western deserts a "war strength regiment of infantry and some artillery … in the midst of an unrestricted maneuver and hundreds of square miles of varied terrain," and the training benefits were, in Patton's words, "almost UNIMAGINED" (Patton 1917, in Province 2002:19; capitals in original). Therefore, when General Patton was tasked with overseeing the creation of the DTC in the western deserts of California, Arizona, and Nevada, he was fully aware of the hardships and "unimagined" benefits of the deserts. Patton scouted the region by plane, jeep, and horseback beginning in March 1942. The area he eventually chose was well suited to military training because of several features, such as the general lack of human habitation, the difficult and varied terrain, the established railroads and highways, the presence of several military installations throughout the region, and the fact that much of the land was owned by the U.S. government (Henley 1989:5–7).

Desert Training Center

Patton established his base of operations near Shaver's Summit (now Chiriaco Summit) at Camp Young. Troops began arriving at the DTC in April 1942 and endured harsh physical training that included limited water, physical endurance training, and lack of sleep. Life at the DTC was so difficult that the officers and enlisted men came to refer to the facility as "the place that God forgot" (Henley 1989:22–24). Patton commanded the DTC for only 3 months, and in July 1942, he was placed in charge of the Allied invasion of North Africa, code named Operation Torch. When General Patton left the DTC, his units were replaced by 12,000 new troops, and he was replaced by Major General Alvan Gillem, Jr. All of the maneuvers that took place in the Project vicinity were likely under the direction of Major General Gillem and his successors. Patton's exercises were largely confined to the desert reaches around Camp Young, many miles to the west. The first large-scale maneuvers reported in the local Palo Verde Valley Times newspaper began in August 1942, and were under the direction of Major General Gillem; maneuvers eventually spilled onto the Palo Verde Mesa.

California-Arizona Maneuver Area

After the resounding success of the Allied troops in North Africa, the need for desert training evaporated, but the perceived benefits of the DTC as a vast theater of war ensured the center's survival. In 1943, after 19 months of operations and expansion, the DTC was home to almost

200,000 troops and had grown in size to an area larger than the whole of England. At its largest, the DTC/California-Arizona Maneuver Area encompassed some 18,000 square miles in California, Arizona, and Nevada. On October 20, 1943, the DTC was officially renamed the California-Arizona Maneuver Area (C-AMA), in recognition of the evolving purpose and scope of the facility (Meller 1946). The facility, though, continues to be better known as the Desert Training Center, and most researchers today refer to the facility by the somewhat cumbersome name, Desert Training Center/California-Arizona Maneuver Area, or DTC/C-AMA (Bischoff 2000). A contemporary account of the DTC/C-AMA, dated November 19, 1943, by Captain Herbert Chase, Public Relations Officer, describes the mission of the facility:

> The mission of the California-Arizona Maneuver Area is to train, maintain, and supply troops realistically as in a Theatre of Operations. The training is designed to harden troops physically and to train soldiers mentally for the shock of battle. Much of the firing is conducted under realistic battle conditions. Other objectives are the development of tactics, techniques, and training methods suitable for desert warfare, and to test and develop equipment and supplies [as quoted in Baty and Maddox 2004:88].

In addition to the command center at Camp Young, the DTC/C-AMA eventually contained 12 divisional camps in California and Arizona, including the top-secret Camp Bouse where specially equipped tanks and their crew were readied for action against the Germans (Baty and Maddox 2004; see also Henley 1989:9). Of the California camps, Camps Iron Mountain, Essex/Clipper, and the short-lived Camp Rice (40 miles north of the Project) were constructed in the spring of 1942. Shortly thereafter, Camps Coxcomb and Ibis were constructed in the summer of 1942 and the winter of 1942/1943, respectively (Bischoff 2000). Camp Pilot Knob, the farthest south camp located roughly 60 miles due south of the Project, was constructed in the spring of 1943. Camps Laguna, Horn, Hyder, and Bouse, in Arizona, were constructed after the Arizona land known as "Area B" was added to the DTC/C-AMA in the summer of 1943 (Bischoff 2000:23). These camps are the most visible remains of the enormous flurry of military activity in the DTC/C-AMA between 1942 and 1944, but they were not the true focus of that activity. None of the DTC/C-AMA camps were located in or near the DQSP, although there is evidence that the Project area was used for training.

Blythe Army Air Base

To support the mission of the DTC/C-AMA, several desert airfields were commandeered and significantly improved by the Army from 1942 through 1944. One of these wartime training bases was the Blythe Army Air Base, which was originally constructed by the Civil Aeronautics Administration (CAA) in 1940 as the Intermediate Flying Field Site 21 (Wilson 2008:4). With the development of the DTC/C-AMA, the little airfield west of Blythe was identified as an excellent candidate for Army use, and it was officially taken over by the Army in April 1942, under the direction of General Henry H. Arnold, Commanding General of the Army Air Forces (Wilson 2008:12). One month later, the 46th Bombardment Group was deployed to the Blythe Army Air Base, and the men immediately went to work building base housing, bringing in utilities, and improving the airfield facilities.

By September 1942, the airfield was formally designated the Blythe Army Air Base, with paved runways suitable for military aircraft. In the spring of 1943, the airfield was further improved, and an "unusually large taxi strip, of a type heavy enough to accommodate the largest four-motored bombers," was constructed (Palo Verde Valley Times, June 4, 1943; see also May 13,

1943). From the fall of 1942 to 1945, the Blythe Army Air Base supported numerous training exercises in the DTC/C-AMA, and became known for its excellent training of heavy bomber crews who went on to complete hundreds of successful bombing missions in Europe and the Pacific (Wilson 2008).

Ultimately, the size of the DTC/C-AMA training exercises became too large to manage, as all available fighting troops were needed on the fronts in Europe and the Pacific. After training hundreds of thousands of enlisted men and officers, and aiding in the formulation of numerous tactical advances, the DTC/C-AMA was closed in April 1944. As a heavy-bombing training facility, the Blythe Army Air Base remained in operation for another year. At the end of 1945, though, after months of slow down-staffing and dismantling, the Blythe Army Air Base was decommissioned and returned to the people of Blythe as a community airport (Palo Verde Valley Times, October 11, 1945, December 20, 1945).

City of Blythe

From 1855 to 1884, the U.S. General Land Office registered many new settlers in the Palo Verde Valley (Setzler 1998:iv). The first large-scale venture to develop land in the valley began in the 1870s with the arrival of Thomas H. Blythe, "the father of the Palo Verde Valley." Blythe was the visionary developer of the seasonally inundated lands on the west bank of the Colorado River, directly across from the established portage point at Ehrenberg, Arizona. Born Thomas Williams in England in 1822, Thomas changed his name after a series of business failures, and came to the U.S. for a new start in 1849. He eventually moved to San Francisco in 1855, and gained some success in a wide range of ventures, including mining, promotion, and general investment. Although he never married, Blythe had one daughter named Florentine Blythe, also known as Flora and Florence, who was born in 1873 and raised without him in England.

In 1875, Blythe traveled with an engineer named William Calloway to Ehrenberg, Arizona, along the Colorado River. Calloway had previously been engaged in building many of the desert roads of San Diego County, which at that time included most of current Riverside County. Calloway's knowledge of the land and engineering acumen impressed Blythe and encouraged him to consider investing in development along the Colorado River. Blythe and Calloway envisioned the development of the river-fed lands, and Blythe had a particular dream of constructing an elaborate hacienda in his newly developed riverside retreat (Setzler 1998:10). To realize his dream, Blythe hired Calloway as a project engineer and George S. Irish as project manager. In 1876, Blythe was introduced to Mexican General Guillermo Andrade, a promoter of colonization of the Colorado River on behalf of the Mexican government. Andrade became a silent partner in Blythe's scheme for development. In the coming years, Blythe's venture to clear and develop 40,000 acres of land west of the Colorado River became an obsession for him, although he spent very little time there (Setzler 1998:10).

In 1875, the venture filed for 400,000 acres of Swamp Land District No. 310, as designated by the California Swamp and Overflow Act (Palo Verde 2005:7). By late 1875, Blythe named his fledgling town, "Blythe City, in compliment to myself" (Setzler 1998:10). Initially the town consisted of tent houses, a corral, and a general store. Thomas Blythe made the first filing in California for water rights in 1877 when he requested rights to Colorado River water for his venture (Setzler 1998:v). He was granted 190,000 miner's inches. Together, Calloway and Irish developed experimental ditch and canal irrigation systems, hiring local Native American laborers who had been farming the floodplains successfully for centuries. The major project of their

irrigation system was the construction of a masonry head gate in the riverbank to control flow to the system (Palo Verde 2005:7). By 1878, a 40-acre experimental farm, known as the Colorado Company, was planted. In 1880, Calloway was killed in an altercation with two of the Native American workers, resulting in a delay in the completion of the main canal intake until he was replaced by C. C. Miller (Setzler 1998:11). Two years later, the canal was almost complete, and Blythe made his second and last visit to the site. Blythe was enthusiastic about the progress, but fatefully, he would never see the fruition of his $82,000 investment. Just 1 year later, on April 4, 1883, Thomas Blythe died of a heart attack in San Francisco (Setzler 1998:11). After years of convoluted legal battles, Blythe's daughter Florence inherited the property in 1904.

Almost immediately, the Mutual Water Company, the precursor to the Palo Verde Irrigation District, was formed to purchase the land from Florence Blythe. Later in 1904, the land was transferred to the Mutual Water Company. During this time, pioneering settlers continued to pour into the valley, and the town of Blythe grew from a tent city into a proper town, finally incorporating in 1916 with 600 residents on 832 acres of land (Palo Verde 2005:7). The first residents were "desert characters, homesteaders, pioneer settlers who wanted land of their own, fugitives from the law, and adventurers who met the accepted challenge to help tame the area and make it civilized" (Setzler 1998:ii). Mining activities and then homesteading and experimental farming continued to attract new residents and commerce via steamboat and railroad. Most of the early homes throughout the Palo Verde Valley were tent houses, although there were also a few adobe buildings in the region (Setzler 1998:1). Blythe and the Palo Verde Valley prospered in the 1910s, with high demands for crops related to wartime activities, most of all cotton. With a new cotton gin in 1911, and settlers clamoring for homestead lots, the town of Blythe experienced a small boom, peaking with high cotton production in 1919 and the end of WWI. Several civil projects were constructed during this period of prosperity, which set the foundation for the continuing growth of the city.

In transforming arid land into productive farming and grazing lands, water was the key. Long after Blythe had incorporated and residents began to farm the productive Palo Verde Valley with Colorado River water, the Metropolitan Water District of Southern California was organized in 1928 to supply the area within its boundaries with water for domestic, industrial, and other beneficial uses. Its first objective was the construction of the Colorado River Aqueduct to transport water from the Colorado River to the Southern California coastal plain. The Metropolitan Aqueduct was constructed from Lake Havasu, north of the Project, through the mountains east of Indio to a reservoir near Riverside, and a distribution system was constructed to serve member cities in Los Angeles and Orange Counties. The diversion of water to the Southern California coastal plain, though, was of little import to the farming communities of Blythe and the greater Palo Verde Valley, as they retained their water rights originally granted to the quixotic town founder, Thomas Blythe.

D.5.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

There are numerous Federal regulations, executive orders, and policies that direct management of cultural resources on Federal lands and by Federal agencies. These include NEPA, the NHPA, the Archaeological Resources Protection Act (ARPA), the NAGPRA, the American Indian

Religious Freedom Act (AIRFA), Executive Order 13007, and the Antiquities Act. The following is a discussion of the most pertinent laws affecting the proposed Project.

National Environmental Policy Act

NEPA (42 U.S.C. §§ 4321-4346) establishes national policy for the protection and enhancement of the environment. Part of the function of the Federal government in protecting the environment is to "preserve important historic, cultural, and natural aspects of our national heritage." The act is implemented by the Council on Environmental Quality (CEQ) regulations at 40 CFR Parts 1500-1508. Refer to Sections 1.3 and 1.4 for more information regarding NEPA as it relates to this Project.

National Historic Preservation Act

The National Historic Preservation Act (NHPA), as amended (54 U.S.C. § 100101 et seq.), is the principal Federal law in the United States protecting cultural resources. Section 106 of the NHPA directs all Federal agencies to take into account the effects of their undertakings (i.e., actions, financial support, and authorizations) on properties included in or eligible for inclusion in the NRHP and to allow the ACHP an opportunity to comment. ACHP regulations at 36 CFR Part 800 implement Section 106 of the NHPA. These regulations establish the NRHP as a planning tool to help Federal agencies evaluate cultural resources in consultation with the SHPO, Native American tribes, and other interested parties. The criteria for determining whether cultural resources are eligible for listing in the NRHP are provided in 36 CFR Part 60.4. These criteria are:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

A) Are associated with events that have made a significant contribution to the broad patterns of our history;

B) Are associated with the lives of persons significant in our past;

C) Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; or

D) Have yielded, or may be likely to yield, information important in prehistory or history.

A cultural resource that is eligible for the NRHP is called a historic property regardless of the time period to which it dates. To be listed in, or determined eligible for, the NRHP a cultural resource must meet one or more of the above criteria and possess integrity. Integrity is defined as the authenticity of a resource's historic identity as evidenced by the survival of physical characteristics that existed during the prehistoric or historic period of use. The NRHP recognizes seven aspects, which in various combinations define integrity: location, design, setting, materials, workmanship, feeling, and association. Integrity of location means that the resource has not been moved from its historic location. Integrity of design, materials, and workmanship mean that the resource's original building materials, plan, shape, and design elements remain intact. Integrity of setting means that the surrounding landscape has changed very little since the period of importance for the resource. Integrity of feeling and association means the resource retains a link to an earlier time and place and is able to evoke that era. Historic properties must

generally be at least 50 years old; however, a younger resource may be considered eligible if it is of exceptional importance.

An undertaking results in adverse effects, or impacts, to a historic property (i.e., a cultural resource eligible to or listed in the NRHP) when it alters the resource's characteristics, including relevant features of its environment or use that qualify it for inclusion in the NRHP. Potential effects could include (36 CFR Part 800.5(a) (2)):

- Physical destruction, damage, or alteration of all or part of the property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR Part 68);
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
- Neglect of a property resulting in its deterioration or destruction; and
- Transfer, lease, or sale of the property.

Compliance with NHPA Section 106 is required whenever a project has a Federal nexus, meaning that the project is on Federal land, uses Federal funds, or is permitted by a Federal agency. The BLM is reviewing an application for and will make a decision on issuing a new ROW grant for the proposed solar facility and gen-tie line. This activity constitutes an undertaking as defined in 36 CFR Part 800.16(y) and requires compliance with Section 106.

Antiquities Act

The Antiquities Act of 1906 (16 U.S.C. § 431-433) was the first law to protect and preserve cultural resources on Federal lands. It makes it illegal to remove cultural resources from Federal lands without a permit and establishes penalties for illegal excavation and looting. The Archaeological Resources Protection Act (see below) reinforces and replaces portions of the Antiquities Act as the authority for special use permits regarding archaeological investigations.

Federal Land Policy and Management Act, 1976 as Amended

The FLPMA (43 U.S.C. § 1701) requires the BLM to manage its lands on the basis of multiple use in a manner that will "protect the quality of…historical…resources and archaeological values." FLPMA is a comprehensive law that provides for the periodic inventory of public lands and resources, for long-range, comprehensive land use planning, for permits to regulate the use of public lands, and for the enforcement of public land laws and regulations. FLPMA compels agencies to manage all cultural resources on public lands through the land management planning process.

Archaeological Resources Protection Act

The Archaeological Resources Protection Act (ARPA) of 1979 (16 U.S.C. § 470 aa-mm) establishes civil and criminal penalties for the unauthorized excavation, removal, damage,

alteration, or defacement of archaeological resources; prohibits trafficking in resources from public lands; and directs Federal agencies to establish educational programs on the importance of archaeology. The act also establishes permit requirements for removal or excavation of archaeological resources from Federal lands. The law applies to archaeological resources more than 100 years old found on public lands. No distinction is made regarding NRHP eligibility.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act of 1978 requires Federal agencies to consult Native American groups when a proposed land use might conflict with traditional Indian religious beliefs or practices; to avoid interference with these beliefs to the extent possible; and to maintain access to religious or sacred areas whenever feasible.

Executive Order 11593, Protection and Enhancement of the Cultural Environment

Issued in 1971, Executive Order 11593 directs land-holding Federal agencies to identify and nominate historic properties to the NRHP and requires that these agencies avoid damaging historic properties that might be eligible to the NRHP. It also directs agencies to treat resources eligible for listing in the NRHP as if they were already listed.

Executive Order 13007, Indian Sacred Sites

Executive Order 13007, issued in 1996, directs Federal agencies responsible for managing Federal lands to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners; avoid adversely affecting the physical integrity of such sacred sites; and maintain the confidentiality of sacred sites.

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments

Executive Order 13175, issued in 2000, directs Federal agencies to establish regular and meaningful consultation and collaboration with Tribal officials in the development of Federal policies that have Tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.

Executive Order 13287, Preserve America

This Executive Order, issued in 2003, encourages the Federal government to take a leadership role in the protection, enhancement, and contemporary use of historic properties and establishes new accountability for agencies with regard to inventories and stewardship.

Memorandum for the Heads of Executive Departments and Agencies Regarding Government-to-Government Relations with Native American Tribal Governments

The Presidential memorandum, issued in 2009, directs each Federal agency to operate within a government-to-government relationship with Federally recognized Tribal governments; consult with Tribal governments; assess the impact of plans, projects, programs, and activities on Tribal trust resources; and ensure that Tribal rights are taken into account during consideration of such plans, projects, and activities.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (25 U.S.C. § 3001) provides a process for Federal agencies to return certain Native American cultural items—

human remains, funerary objects, sacred objects, or objects of cultural patrimony—to lineal descendants and culturally affiliated Indian tribes. NAGPRA includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional excavation and unanticipated discovery of Native American cultural items on Federal lands, and penalties for noncompliance and illegal trafficking. Permits for the excavation or removal of cultural items protected by the act require Tribal consultation, as do discoveries of cultural items made during activities on Federal lands. The Secretary of the Interior's implementing regulations are at 43 CFR Part 10.

State

CEQA

The principal state law relevant to the protection of cultural resources within the 160 acres of privately owned land is CEQA, with particular reference to California PRC 21083.2 to 21084.1, which addresses historical resources, unique archaeological resources, and Native American human remains.

Section 5097.5 of the PRC specifies that any unauthorized disturbance or removal of archaeological and historical resources located on public lands is a misdemeanor. This Section also prohibits the knowing destruction of objects of antiquity without a permit (expressed permission) on public lands, and provides for criminal sanctions. In addition, Section 30244 of the PRC requires reasonable mitigation for adverse impacts on archaeological resources as identified by the SHPO. Further, California Penal Code, Section 622.5, provides misdemeanor penalties for willfully injuring or destroying objects of historic or archaeological interest located on public or private lands, but specifically excludes the landowner.

Historical Resources

Lead agencies are required to identify historical resources that may be affected by any undertaking involving state or county lands, funds, or permitting. Also, the significance of such resources that may be affected by the undertaking must be evaluated using the criteria for listing in the CRHR (PRC §5024.1, Title 14 CCR, Section 4852). Under CEQA, a resource is considered historically significant if the resource satisfies any of the following criteria:

1. A resource listed in, or determined to be eligible by the State Historical Resources Commission for listing in, the CRHR (PRC §5024.1, Title 14 CCR, Section 4850 et seq.).
2. A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the PRC or identified as significant in an historical resource survey meeting the requirements section 5024.1(g) of the PRC, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically

significant" if the resource meets the criteria for listing on the CRHR (PRC §5024.1, Title 14 CCR, Section 4852) including the following:

A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

B) Is associated with the lives of persons important in our past;

C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

D) Has yielded, or may be likely to yield, information important in prehistory or history.

4. The fact that a resource is not listed in, or determined to be eligible for listing in, the CRHR, not included in a local register of historical resources (pursuant to section 5020.1(k) of the PRC), or identified in an historical resources survey (meeting the criteria in Section 5024.1(g) of the PRC) does not preclude a lead agency from determining that the resource may be an historical resource as defined in PRC Sections 5020.1(j) or 5024.1.

Resources already listed or determined eligible for the NRHP and CHL (No. 770 and above) are by definition eligible for the CRHR. Historical resources included in resource inventories prepared according to California State Office of Historic Preservation (OHP) guidelines or designated under county or city historic landmark ordinances may be eligible.

For a resource to be eligible for the CRHR, it must satisfy each of the following three standards:

1. A property must be significant at the local, state or national level, under one or more of the following criteria:
   a. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of the history and cultural heritage of California and the United States.
   b. It is associated with the lives of persons important to the nation or California's past.
   c. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
   d. It has yielded, or may be likely to yield, information important to the prehistory or history of the state or the nation:
2. A resource must retain enough of its historic character or appearance to be recognizable as a historic property, and to convey the reasons for its significance; and
3. It must be fifty years old or older (except for rare cases of structures of exceptional significance).

Integrity is defined as the authenticity of a historical resource's physical identity, evidenced by the survival of characteristics that existed during the resource's period of significance. CRHR regulations specify that integrity is a quality that applies to historical resources in seven ways: location, design, setting, materials, workmanship, feeling, and association.

Unique Archaeological Resources

Lead agencies must also determine whether a proposed project will have a significant effect on unique archaeological resources. PRC 21083.2(g) states:

"…a 'unique archaeological resource' means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

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

A non-unique archaeological resource does not meet these criteria and does not need to be given further consideration other than simple recording, unless it happens to qualify as a historical resource.

Native American Human Remains

The state CEQA Guidelines (Section 15064.5 (d)) provide that when an initial study identifies the existence of, or probable likelihood of, Native American human remains within the Project, a lead agency will work with the appropriate Native Americans as identified by the NAHC.

Native American Consultation

Pursuant to Senate Bill (SB) 18 (California Government Code §65352.3), local governments are required to consult with California Native American tribes identified by the NAHC for the purpose of protecting and/or mitigating impacts to cultural places. SB 18 requires formal consultation with Native American tribes as part of a project that enacts or amends a general plan or specific plan. The proposed Project would not require a general plan or specific plan amendment; therefore, SB 18 does not apply to the proposed Project. However, as described above, Native American Coordination has been initiated with Native American groups with historic ties to, and interest in, the proposed Project area.

Assembly Bill (AB) 52 (PRC Section 5097.94, 21073, 21074, 21080.3.2, 21082.3, 21083.09, and 21084.3) requires the lead agency of a project to consult with interested California Native American tribes that have a traditional or cultural affiliation with the project area for projects with a NOP after July 1, 2015. Tribes must notify the lead agency in writing that they are interested in consulting on projects within a particular geographic area. Lead agencies must then notify the interested California Native American tribes about the proposed Project prior to determining whether a negative declaration, mitigated negative declaration, or environmental impact report will be prepared. AB 52 also provides recognition of tribal cultural resources in the CEQA process. This category of resources includes sites, features, places, landscapes, and objects that are essential to traditional cultural values, heritages, and identities of California Native Americans. Some of the preferred mitigation measures included in AB 52 are preservation in place, a conservation easement, or to incorporate the resource within a park or open space. AB 52 specifies that it is applicable to projects that have a NOP or a notice of

negative declaration filed or mitigated negative declaration on or after July 1, 2015. Because the date of the NOP for the DQSP was March 12, 2015, AB 52 is not applicable to the Project.

Local

Riverside County General Plan- Multipurpose Open Space Element

The Multipurpose Open Space Element of the Riverside County General Plan (Riverside County 2015a) outlines policies intended to promote the preservation of cultural resources in the County of Riverside, as follows:

OS 19.3 - Review proposed development for the possibility of cultural resources and for compliance with the cultural resources program.

OS 19.5 - Exercise sensitivity and respect for human remains form both prehistoric and historic time periods and comply with all applicable laws concerning such remains.

D.6 ENVIRONMENTAL JUSTICE

D.6.1 Regional and Background Information

There is no regional or background information relevant to environmental justice impacts. Environmental justice populations specific to the Project area are described in Section 3.6.

D.6.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

Title VI of the Civil Rights Act of 1964

Title VI of the Civil Rights Act of 1964 (Public Law 88-352, 78 Stat.241) prohibits discrimination on the basis of race, color, or national origin in all programs or activities receiving Federal financial assistance.

Executive Order 12898

Executive Order 12898, "Federal Actions to address environmental justice in Minority Populations and Low-Income Populations," focuses Federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission (59 FR 7629). The order requires the USEPA and all other Federal agencies (as well as state agencies receiving Federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

Council on Environmental Quality

The CEQ has oversight responsibility for the Federal Government's compliance with Executive Order 12898 and NEPA. The CEQ, in consultation with the USEPA and other agencies, has developed guidance to assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. According to the CEQ's *Environmental*

Justice Guidance Under the National Environmental Policy Act (CEQ 1997), agencies should consider the composition of the affected area to determine whether minority populations or low-income populations are present in the area affected by the proposed action, and if so whether there may be disproportionately high and adverse environmental effects.

Environmental Protection Agency (EPA) Final Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses

The EPA's Final Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses defines how the EPA will ensure that disproportionately high and adverse human health or environmental effects on minority communities and low-income communities are identified and addressed. It establishes agency-wide goals for engaging American Indian, Alaska Native, Native Hawaiian, and other indigenous peoples. It also establishes agency-wide goals for environmental protection and lists actions the EPA would take to incorporate environmental justice into its mission (EPA 1998).

Environmental Protection Agency Plan Environmental Justice 2014

The EPA's Plan Environmental Justice (EJ) 2014 is a strategy to help the agency integrate environmental justice into its programs, policies, and activities. Plan EJ 2014 identifies Cross-Agency Focus Areas, Tools Development, and Program Initiatives as the three essential elements that will advance environmental justice across the EPA and other agencies of the Federal government.

BLM Land Use Planning Handbook (H-1601-1)

BLM Land Use Planning Handbook, H-1601-1, Appendix D, Section IV (Environmental Justice Requirements) provides guidance for assessing potential impacts on population, housing, and employment as they relate to environmental justice. It also describes variables such as lifestyles, beliefs and attitudes, and social organizations with respect to environmental justice. These variables were not evaluated in this analysis, as they are cannot be readily quantified for the purposes of impact assessment and do not provide any additional analytical value in terms of evaluating potential environmental justice impacts.

State

No state statutes, regulations, plans, or standards related to environmental justice would be applicable to the DQSP.

D.7 GEOLOGY AND SOIL RESOURCES

D.7.1 Regional and Background Information

Regional Geology and Seismicity

The Project would be located on the Palo Verde Mesa in the Mojave Desert Geomorphic Province in Riverside County, California. This geomorphic province encompasses an area that extends from the Colorado River on the east, the San Andreas Fault on the west, and the Garlock Fault on the northwest. The province is generally characterized by broad alluvial valleys separated by steep, discontinuous, sub-parallel mountain ranges that generally trend northwest-southeast.

The bedrock of the Palo Verde Mesa in the vicinity of the Project site is composed of Pre-Cretaceous metamorphosed sedimentary rocks in the northern portion of the site, and Precambrian granite, Jurassic volcanic rocks, and Jurassic plutonic rocks in the southern portion. Previous investigators (CGS 1994) mapped a pre-Quaternary thrust fault immediately to the southwest of the Project site, while more recent investigators (USGS 2006) present the geology of that area as consisting of Quaternary alluvial terraces of varying ages. The Precambrian to Mesozoic bedrock in the southwestern portion of the site is overlain by Tertiary age volcanics which were deposited between 5.3 and 34 million years before present. In the southeastern corner of the site, the bedrock is overlain by Pleistocene non-marine sediments.

Faulting and Seismicity

Hazards which can be potentially associated with active seismic activity could include surface fault rupture, ground shaking, liquefaction, settlement, and landslides. The Project site is located in a seismically active region of Southern California. The San Andreas Fault is the boundary between the North American and Pacific crustal plates, with the North American Plate moving southeastward relative to the Pacific plate at a rate of about 40 to 50 millimeters per year. Most of this movement occurs on the San Andreas Fault, while a smaller amount of movement occurs on shorter active faults in the region. Seismic hazards can occur from both the San Andreas Fault, and from the smaller faults.

The California Geological Survey (CGS) defines an active fault as one that has had surface displacement during the Holocene age (roughly the last 11,000 years). Potentially active faults are those that show evidence of surface displacement during the Quaternary age (roughly the last 1.6 million years) but for which evidence of Holocene movement has not been established. An inactive fault is one that has not shown evidence of surface displacement during the Quaternary age.

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude and nature of fault rupture can vary for different faults, or even along different strands of the same fault. Ground rupture is considered most likely along active faults.

Ground Shaking

Generally, the greater the earthquake magnitude and the closer the fault rupture to a site, the greater the intensity of ground shaking. The amplitude and frequency of ground shaking are related to the size of an earthquake, the distance from the causative fault, the type of fault, and the response of the geologic materials at the site. Ground shaking can be described in terms of acceleration, velocity, and displacement of the ground.

A common measure of ground motion during an earthquake is the peak ground acceleration (PGA). The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. PGA is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. Unlike measures of magnitude, which provide a single measure of earthquake energy, PGA varies from place to place, and is dependent on the distance from the epicenter and the character of the underlying geology (e.g. hard bedrock, soft sediments, or artificial fills).

The Modified Mercalli (MM) Intensity Scale assigns an intensity value based on the observed effects of ground-shaking produced by an earthquake. Unlike measures of earthquake magnitude, the MM intensity scale is qualitative in nature (i.e. it is based on actual observed effects rather than measured values). MM intensity values for an earthquake at any one place can vary depending on its magnitude, the distance from its epicenter, and the type of geologic material. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X could cause moderate to significant structural damage. Because the MM Intensity Scale is a measure of ground-shaking effects, intensity values can be related to a range of PGA values.

Liquefaction

Liquefaction is the significant and sudden reduction in stiffness and sheer strength of saturated sandy soils caused by a sudden increase in pore water pressure caused by an earthquake. The susceptibility of a site to liquefaction is related not only to the potential for ground shaking, but the water content, depth, and density of granular sediments. Liquefaction can intensify ground shaking, and therefore increase the amount of damage that could occur due to a seismic event.

Soils

Settlement

Settlement of soils can occur if site soils are composed of unconsolidated sediments and/or artificial fill. Settlement can be intensified during ground shaking seismic events.

Subsidence

Subsidence of the land surface can be caused by seismic events, withdrawal of subsurface fluids, collapse of underground cavities, or consolidation or hydrocompaction of unconsolidated sediments. Consolidation can occur naturally, or can be increased by the placement of foundation or fill loads above unconsolidated sediments. Collapsible soils can undergo subsidence when exposed to water in a process called hydrocompaction. This can occur in areas associated with alluvial fans, windblown materials, or colluvium.

Expansive Soils

Expansive soils can expand or contract in response to moisture content, resulting in movements that can damage and/or distress to structures and equipment with shallow foundations.

Corrosive Soils

Corrosivity refers to potential soil-induced electrochemical or chemical action that could corrode or deteriorate concrete, reinforcing steel in concrete structures, and bare-metal structures exposed to these soils.

D.7.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

International Building Code

The International Building Code (IBC) is published by the International Code Council (ICC) and is the national model building code. The 2018 IBC, published in August, 2017, is the most recent

edition of the International Building Code, and applies to all structures currently being constructed in California (ICC 2017). The national model codes are incorporated by reference into the building codes of local municipalities, such as the California Building Code (CBC) and County of Riverside Building Code as discussed below.

State

California Building Code

The CBC is promulgated under the CCR, Title 24, Parts 1 through 12 (also known as the California Building Standards Code), and is administered by the California Building Standards Commission. The Project is subject to the applicable sections of the CBC updated most recently in January, 2017. The Riverside County Building Department is responsible for implementing the CBC for the Project. The Project would comply with applicable seismic design and construction criteria of the most recent CBC and American Society of Civil Engineers (ASCE) Minimum Design Loads for Buildings and Other Structures (ASCE 7-05).

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) signed into law in December of 1972, requires the delineation of zones along active faults in California. The purpose of the Alquist-Priolo Fault Zoning Act is to regulate development on or near active fault traces to reduce the hazard of potential fault rupture and to prohibit the location of structures for human occupancy across these traces. Cities and counties must regulate certain development projects within the zones, which includes withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement (Hart and Bryant 2007). The Project is not subject to this act because it is not within an earthquake fault zone. Nevertheless, this act is included in the regulatory framework because it requires the State of California to identify and disseminate information about the location of earthquake fault zones, which is considered relevant to the environmental setting.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was developed to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the State Geologist to delineate "zones of required investigation" (i.e., seismic hazard zones) where site investigations are required to determine the need for mitigation of potential liquefaction and/or earthquake-induced landslide ground displacements. The act requires cities, counties, and other local permitting agencies to regulate certain development projects by implementing the provisions of the act through various local building codes, permits, and ordinances. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design, consistent with CGS Special Publication 117, *Guidelines for Evaluating and Mitigating Seismic Hazards in California*. Because the CGS has not established seismic hazard zones for the Project area, the Applicant is not required to comply with the evaluation and mitigation guidelines. Nevertheless, this act is included in the regulatory framework because it requires the State of California to identify and disseminate information about seismic hazards, which is considered relevant to the environmental setting.

Local

Riverside County General Plan – Palo Verde Valley Area Plan

Portions of the Palo Verde Valley planning area may be subject to seismic hazards. Threats from seismic events include ground shaking, fault rupture, liquefaction, and landslides. In the Palo Verde Valley planning area, liquefaction poses the most significant threat from a seismic event. Generally, the use of building techniques and practical avoidance measures help mitigate potentially dangerous seismic events. The Palo Verde Valley Area Plan (PVVAP) provides the policy related to seismic hazards below.

PVVAP 15.1. Protect life and property from seismic related incidents through adherence to the Seismic Hazards section of the General Plan Safety Element.

D.8 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

D.8.1 Regional and Background Information

Characteristics and Definition

Global climate change refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), which are known as GHGs. These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere. Gases that trap heat in the atmosphere are often called greenhouse gases, analogous to a greenhouse, and are emitted by both natural processes and human activities. GHGs in the atmosphere influence regulation of the Earth's temperature. Emissions from human activities, such as burning fossil fuels for electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere.

Scientific evidence indicates a trend of increasing global temperature over the past century, which a number of scientists attribute to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

Recent observed changes due to global warming include shrinking glaciers, thawing permafrost, a lengthened growing season, and shifts in plant and animal ranges (IPCC 2007). Generally accepted predictions of long-term environmental impacts due to global warming include sea level rise, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems, including the potential loss of species, and a significant reduction in winter snowpack.

Climate change refers to any significant change in measures of climate, such as average temperature, precipitation, or wind patterns over a period of time. Climate change may result from natural factors, natural processes, and/or human activities that change the composition of the atmosphere and alter the surface and features of land.

The United Nations Intergovernmental Panel on Climate Change (IPCC) developed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The IPCC concluded that a stabilization of GHGs at 400 to 450 ppm CO_2 equivalent

concentration is required to keep global mean warming below 3.6ºF (2º Celsius [2ºC]), which is assumed to be necessary to avoid dangerous climate change (AEP 2007).

The State of California has been at the forefront of developing solutions to address climate change. State law defines greenhouse gases as any of the following compounds: CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) (California Health and Safety Code Section 38505(g)). CO_2, CH_4, and N_2O are the most common GHGs that result from human activity.

In addition, the State of California manages emission of "short-lived climate pollutants." Among these pollutants are methane, fluorinated gases including hydrofluorocarbons (HFCs), and black carbon. As of January 1, 2018, ARB is implementing a Shor-lived Climate Pollutant Strategy, with the aim of setting statewide 2030 emission reduction targets for methane, HFCs, and anthropogenic black carbon. The initial emphasis of the Strategy is to address methane emissions from dairies, other livestock operations, and landfills. Solar energy installations are not a focus of the Strategy.

Greenhouse Gases

Gases that trap heat in the atmosphere are often referred to as Greenhouse Gases (GHGs), which are emitted into the atmosphere through natural processes and human activities. GHGs are so named because of their ability to prevent heat from the surface of the earth from escaping into space. Many GHGs have lifetimes of decades or even centuries in the atmosphere; so the problem cannot be eliminated quickly. Thus, the problems we are experiencing today do not accurately represent the full effects we may see years from now based on current levels of GHGs (CARB 2009).

The principal GHGs contributing to climate-change and resulting from human activity are carbon dioxide (CO_2), methane (CH_4), and fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement).

When quantifying GHG emissions, the different global warming potentials of GHG pollutants are usually taken into account by normalizing their rates to an equivalent CO_2 emission rate. Global warming potential is a relative measure of a compound's residence time in the atmosphere and ability to warm the planet. For example, SF_6, while representing a small fraction of the total GHGs emitted annually worldwide, is a very potent GHG with 23,900 times the global warming potential of CO_2. Therefore, an emission of one metric ton of SF_6 would be reported as an emission of 23,900 metric tons CO_2e. Large emission sources are reported in million metric tons of CO_2e. A metric ton is 1,000 kilograms; it is equal to approximately 1.1 U.S. tons and approximately 2,204.6 pounds.

Other greenhouse gases include water vapor, ozone, and aerosols. Water vapor is an important component of our climate system and is not regulated. Ozone and aerosols are short-lived greenhouse gases; global warming potentials for short-lived greenhouse gases are not defined by the IPCC. Aerosols can remain suspended in the atmosphere for about a week and can warm the atmosphere by absorbing heat and cool the atmosphere by reflecting light. Black carbon is formed by incomplete combustion of fossil fuels, biofuels, and biomass. 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, as opposed to other greenhouse gases that can remain in the atmosphere for years.

GHG emissions from the electricity sector are dominated by CO_2 emissions from carbon-based fuels. Other sources of GHG emissions are small and also are more likely to be easily controlled or reused or recycled, but are nevertheless documented here as some of the compounds that have very high global warming potentials. These air pollutants are considered to be GHGs because their presence in the atmosphere results in increased solar absorbance, and/or prevents heat from the surface of the Earth from escaping to space. The principal GHGs resulting from human activity that enter and accumulate in the atmosphere are described below.

Carbon Dioxide (CO_2)

CO_2 is a naturally occurring gas that enters the atmosphere through natural as well as anthropogenic sources. Key anthropogenic sources include: the burning of fossil fuels (e.g., oil, natural gas, coal, etc.); solid waste; trees, wood products, and other biomass; and industrially relevant chemical reactions such as those associated with manufacturing cement. CO_2 is removed from the atmosphere when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH_4)

Like CO_2, CH_4 is emitted from both natural and anthropogenic sources. Key anthropogenic sources of CH_4 include gaseous emissions from landfills, releases associated with mining and materials extraction industries, in particular coal mining, and fugitive releases associated with the extraction and transport of natural gas and crude oil. CH_4 emissions also result from livestock and agricultural practices. Small quantities of CH_4 are released during fossil fuel combustion.

Nitrous Oxide (N_2O)

N_2O is also emitted from both natural and anthropogenic sources. Important anthropogenic source activities include industrial activities, agricultural activities (primarily application of nitrogen fertilizer), the use of explosives, combustion of fossil fuels, and decay of solid waste.

Fluorinated Gases

HFCs, PFCs, and SF_6 are synthetic gases that are emitted from a variety of industrial processes and contribute substantially more to the greenhouse effect than the GHGs described previously. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). These gases are typically emitted in small quantities, but because they are potent GHGs, they are sometimes referred to as high global warming potential gases.

GHG Inventory Methodology

Total GHG emissions from a source are often reported as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emission of each GHG by its global warming potential and adding the results together to produce a single, combined emission rate representing all GHGs. GHG emissions are typically quantified in metric tons (MT) or millions of metric tons (MMT).

GHGs have varying global warming potential. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (EPA 2016a). The global warming potential rating system is standardized to CO_2,

which has a value of one. For example, CH_4 has a global warming potential of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. Table D.8-1 presents the global warming potential and atmospheric lifetimes of common GHGs.

Table D.8-1. Global Warming Potentials and Atmospheric Lifetimes of GHGs

GHG	Formula	100-Year Global Warming Potential	Atmospheric Lifetime (Years)
Carbon Dioxide	CO_2	1	Variable
Methane	CH_4	28-36	12 ± 3
Nitrous Oxide	N_2O	265-298	120
Sulfur Hexafluoride	SF_6	23,900	3,200

Source: EPA 2016a.

Human-caused sources of CO_2 include combustion of fossil fuels (coal, oil, natural gas, gasoline, and wood). Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. Concentrations of CO_2 have increased in the atmosphere since the industrial revolution.

CH_4 is the main component of natural gas and also arises naturally from the anaerobic decay of organic matter. Human-caused sources of natural gas include landfills, fermentation of manure, and cattle farming. Human-caused sources of N_2O include combustion of fossil fuels and industrial processes such as the production of nylon or nitric acid.

Other GHGs are present in trace amounts in the atmosphere and are generated from various industrial or other uses.

National GHG Emissions

Anthropogenic GHG emissions in the United States derive mostly from the combustion of fossil fuels for transportation and power production. Energy-related CO_2 emissions, resulting from fossil fuel exploration and use, account for approximately three-quarters of the human-generated GHG emissions in the United States, primarily in the form of CO_2 emissions from burning fossil fuels. Approximately 31 percent of US GHG emissions come from electricity production; 27 percent derive from transportation; while industrial processes, agriculture, forestry, other land uses, and waste management compose a majority of the remaining of sources (EPA 2016b). Approximately one-third of GHG emissions come from motor vehicle transportation, including motorized vehicles using the transportation network on public lands (EPA 2016b).

According to the Environmental Protection Agency's inventory of GHG emissions from 1990 to 2013 (EPA 2018), U.S. greenhouse gas emissions in 2016 were measured as 6,611 million metric tons of carbon dioxide equivalent. This is a 2.4 percent increase in GHG emissions from 1990 to 2016, but an 11.4 percent decrease from the peak of 7,351 million metric tons in 2007. In terms of the overall trend from 1990 to 2016, total transportation CO_2 emissions rose by 21.4 percent due, in large part, to increased demand for travel as fleet wide light-duty vehicle fuel economy was relatively stable. The number of vehicle miles traveled by light-duty motor vehicles (passenger cars and light-duty trucks) increased 44 percent from 1990 to 2016, as a result of a confluence of factors including population growth, economic growth, urban sprawl, and low fuel prices during the beginning of this period. Some of the recent emissions increases are attributed to increased energy consumption due to colder winter conditions in some parts of the country.

Anthropogenic emissions of volatile organic compounds (VOCs) include fuel production, distribution, and combustion, with the largest source being emissions from motor vehicles due to either evaporation or incomplete combustion of fuel, and from biomass burning. Thousands of different compounds with varying lifetimes and chemical behavior have been observed in the atmosphere, so most models of tropospheric chemistry include some chemical speciation of VOCs. Generally, fossil VOC sources have already been accounted for as release of fossil carbon in the CO_2 budgets and thus VOCs are not included as a component of GHG emission calculations.

State GHG Emissions

The State of California GHG Inventory performed by the CARB compiled statewide anthropogenic GHG emissions and sinks. It includes estimates for CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs. The current inventory covers the years 2000 to 2013, and is summarized in Table D.8-2. Data sources used to calculate this GHG inventory include California and Federal agencies, international organizations, and industry associations. The calculation methodologies are consistent with guidance from the IPCC. The 2000 emissions level is the sum total of sources and sinks from all sectors and categories in the inventory. The inventory is divided into seven broad sectors and categories in the inventory. These sectors include electricity generation (both generated in-state and imported from out of state), transportation, industrial, commercial, residential, agriculture, and not specified (solvents and chemicals).

Table D.8-2. State of California GHG Emissions by Sector, 2000-2013

Sector	Total 2000 Emissions (MMT CO_2e)	Percent of Total 2000 Emissions	Total 2013 Emissions (MMT CO_2e)	Percent of Total 2013 Emissions
Electricity Generation (in state)	59.19	12.7	50.58	11.0
Electricity Generation (imported)	45.99	9.8	40.05	8.7
Transportation	178.12	38.0	172.53	37.6
Industrial	105.40	22.5	104.16	22.7
Commercial	14.95	3.2	22.63	4.9
Residential	31.82	6.8	32.32	7.0
Agriculture	32.1	6.8	36.21	7.9
Solvents and Chemicals	1.2	0.3	0.79	0.2
Total California Emissions	468.8	NA	459.3	NA

Source: CARB 2015

In 2013, California's GHG emissions were calculated as 459.3 million metric tons of carbon dioxide equivalent; incorporating broad GHG-producing sectors throughout the state. The CARB 2015 Greenhouse Gas Emission Inventory: 2000 – 2013 shows that California's gross emissions of greenhouse gases decreased by 2.0 percent from 468.8 million metric tons of CO_2e in 2000 to 459.3 million in 2012, with a maximum of 495.3 million tons in 2004. During the same period, California's population grew by 11 percent from 34 to 37.8 million people. As a result, California's per capita GHG emissions have generally decreased from 13.7 in 2000 to 12.2 tons of CO_2e per person in 2013.2

In 2015, the transportation sector remained as California's largest source of GHG emissions, accounting for 37.6 percent of GHG emission inventory. Contributions from the transportation

sector include emissions from on-road and off-road vehicles, aviation, rail and water-borne vehicles, and some other minor sources. Transportation-related GHG emissions have dropped 10 percent since reaching a maximum of 191.94 million tons in 2007. Emissions from on-road sources, which consist of light-duty vehicles (cars, motorcycles, and light-duty trucks), heavy-duty trucks, and buses, accounted for over 92 percent of transportation sector GHG emissions in 2013. Of the on-road vehicles, light duty vehicles accounted for approximately 69 percent of emissions in 2013. On-road emissions declined each year since 2006, until they increased by 0.8 percent in 2013. Total transportation sector emissions also decreased each year since 2007, until they increased from 2012 to 2013.

In California, renewable electricity sources have been given preference over fossil fuel fired electricity sources. This means that when renewable energy is available on the grid, the California Independent Systems Operator (CAISO) requests turndown of fossil power production. When the renewable facility goes off-line, if there is still demand, the CAISO requests turn-up of fossil power production. Some fossil fuel load-following plants will adjust automatically as renewable sources come on- and off-line. As a result of these operating scenarios, new renewable energy power plants operating in California offset the production of electricity from fossil fuel fired power plants.

Local GHG Emissions

Several regional and local governments and air districts have developed climate and or GHG reduction plans and initiatives~~, like that of Riverside County,~~ which provide a step-down from state regulations. Riverside County has developed a Climate Action Plan (CAP; Riverside County 2018) that establishes goals and policies that incorporate environmental responsibility into its daily management of residential, commercial, and industrial growth. In the CAP, Riverside County anticipates greenhouse gas emissions declining 15 percent in 2035 over 2008 emissions, even with a 92.6% increase in households and a 165.1% increase in employment. In addition, local air quality districts have adopted various levels of significance for carbon dioxide emissions and county and city governments are developing climate change and greenhouse gas emissions guidance and strategies. For example, the MDAQMD has adopted a significance threshold of 100,000 tons per year of CO2e for the district, which is equivalent to 90,718.47 metric tons of CO2e (MT CO2e). The MDAQMD has adopted greenhouse gas emissions thresholds in its CEQA Guidelines, but has not adopted a comprehensive strategy for reducing greenhouse gas emissions.

The DRECP analyzed the direct greenhouse gas emissions of renewable energy projects within the planning area. The project-specific estimates used excluded external or life-cycle emissions, such as those from raw materials and manufacturing. The combined construction emissions of the existing projects were amortized over the life of each project, and were added to the operational and maintenance emissions. The analysis calculated a GHG emission rate ranging from about 1 to 39 MT CO2e per year for each megawatt of built capacity, with an average of less than 10 MT CO2e per year. Based on those estimates, the construction, operation and maintenance, and decommissioning activities for the 50 existing renewable energy projects in the DRECP area, with a combined generation capacity of 6,250 MW, may emit about 62,500 MT CO2e per year. The development of renewable energy sources in the DRECP is expected to offset some of the use and or dependency for fossil fuel energy, thereby reducing greenhouse emissions through mitigation.

D.8.2 Applicable Statutes, Regulations, Plans, and Standards

On a national scale, Federal agencies are addressing emissions of GHGs by reductions mandated in Federal laws and Executive Orders. Several states have promulgated laws as a means to reduce statewide levels of GHG emissions. In particular, the California Global Warming Solutions Act of 2006 directs the State of California to reduce statewide GHG emissions to 1990 levels by the year 2020.

Federal

Secretarial Order No. 3289

On September 14, 2009, Secretary of the Interior Ken Salazar issued Secretarial Order No. 3289, addressing the impacts of climate change on domestic water, land, and other natural and cultural resources. The Order establishes an approach for increasing understanding of climate change and responding to potential climate change related impacts as relevant to the resources that the DOI manages. The document specifically identifies potential impact areas including potential changes in flood risk and water supply, sea level rise, changes in wildlife and habitat populations and their migration patterns, new invasions of exotic species, and increased threat of wildland fire. The Order includes Climate Change Response Planning Requirements, which require each bureau and office within the DOI (including BLM) to consider and analyze potential climate change impacts when undertaking long range planning exercises, setting priorities for scientific research and investigations, developing multi-year management plans, and making major decisions regarding potential use of resources under DOI's purview.

National Fish, Wildlife, and Plants Climate Adaptation Strategy

The National Fish, Wildlife, and Plants Climate Adaptation Strategy outline the first joint effort of three levels of government (Federal, state, and tribal) with primary authority and responsibility for the living resources within the United States. The intent of the strategy is to identify how these resources can become more resilient, adapt to, and survive a warming climate.

Environmental Protection Agency Endangerment Finding

Recent actions by the EPA have allowed for the regulation of GHGs. On April 17, 2009, the EPA issued its proposed endangerment finding for GHG emissions. On December 7, 2009, the EPA Administrator signed and finalized two distinct findings regarding greenhouse gases 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 (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6)—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 that threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action was a prerequisite to finalizing the EPA's proposed GHG emission standards for light-duty vehicles, which were jointly proposed by the EPA and the Department of Transportation's National Highway Safety Administration on September 15, 2009 and adopted on April 1, 2010. As finalized in April 2010, the emissions standards rule for vehicles will improve average fuel economy standards to 35.5 miles per gallon by 2016. In addition, the rule will require model year 2016 vehicles to meet an estimated combined average emission level of 250 grams of CO_2 per mile.

On March 10, 2009, in response to the FY2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110–161), the EPA proposed a rule that requires mandatory reporting of GHG emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of Greenhouse Gases Rule was signed, and it was published in the Federal Register on October 30, 2009. The rule became effective on December 29, 2009. The rule will collect accurate and comprehensive emissions data to inform future policy decisions.

The EPA is requiring 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 to submit annual reports to the EPA. The gases covered by the proposed rule are CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, and other fluorinated gases, including nitrogen trifluoride (NF_3) and hydrofluorinated ethers (HFE).

State

The State of California enacted some of the first legislation in the United States to regulate GHGs. The following subsections describe regulations and standards that have been adopted by the State of California to address GHG emissions.

Western Climate Initiative

California is part of the Western Climate Initiative (WCI), an effort of the western states and Canadian provinces to establish a cap and trade market to reduce GHG emissions in the Western United States with offsets in Canada and other countries. WCI adopted a goal of an aggregate reduction of 15 percent below 2005 GHG levels by 2020. It has voluntarily prepared a GHG inventory based on calendar year 2004, as well as a set of rules for Climate Change (Regulation XXVII), including the Southern California Climate Solutions Exchange (Rule 2701), and the Greenhouse Gas Reduction Program (Rule 2702). California's Cap-and-Trade program helps to ensure that emissions continually decline, even alongside stronger economic growth and potentially drier hydrological conditions, and in the event of any additional unforeseen circumstances. The 2014 edition GHG inventory represents a transition to global warming potentials (GWPs) derived from the Intergovernmental Panel on Climate Change (IPCC) 4th Assessment Report (AR4). Previous GHG inventories relied on GWPs from IPCC's Second Assessment Report (SAR).

California Code of Regulations Title 24

Although not originally intended to reduce GHG emissions, Title 24 of the California Code of Regulations, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow for the

consideration and possible incorporation of new energy efficiency technologies and methods. Energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in GHG emissions. Therefore, increased energy efficiency results in decreased GHG emissions.

The GHG emission inventory was based on Title 24 standards as of October 2005; however, Title 24 has been updated as of 2008 and standards are currently being phased in.

Executive Order S-3-05

Executive Order S-3-05, signed by Governor Schwarzenegger on June 1, 2005, calls for a reduction in GHG emissions to 1990 levels by 2020 and for an 80 percent reduction in GHG emissions below 1990 levels by 2050. Executive Order S-3-05 also calls for the California EPA to prepare biennial science reports on the potential impact of continued global climate change on certain sectors of the California economy. The first of these reports, "Our Changing Climate: Assessing Risks to California," and its supporting document, "Scenarios of Climate Change in California: An Overview," were published by the California Climate Change Center in 2006.

Senate Bill 1078, Senate Bill 107, and Executive Order S-14-08

SB 1078 initially set a target of 20 percent of energy to be sold from renewable sources by the year 2017. The schedule for implementation of the renewable portfolio standard (RPS) was accelerated in 2006 with the Governor's signing of SB 107, which accelerated the 20 percent RPS goal from 2017 to 2010. On November 17, 2008, the Governor signed Executive Order S-14-08, which establishes a goal of having all retail sellers of electricity to serve 33 percent of their load with renewable energy by 2020. The Governor signed Executive Order S-21-09 on September 15, 2009, which directs the CARB to implement a regulation consistent with the 2020 33 percent renewable energy target by July 31, 2010.

Senate Bill 1368

SB 1368 was enacted in 2006, and required the CPUC to establish a CO_2 emissions standard for base load generation owned by or under long-term contract with publicly owned utilities. The CPUC established a GHG Emissions Performance Standard of 1,100 pounds of CO_2 per megawatt-hour (MWh). SB 1368 also requires the posting of notices of public deliberations by publicly owned companies on the CPUC website and establishes a process to determine compliance with the Emissions Performance Standard. The Project, as a renewable energy generation facility, is determined by rule to comply with the GHG Emission Performance Standard requirements of SB 1368.

Assembly Bill 32

In September 2006, Governor Schwarzenegger signed Assembly Bill (AB) 32 into law. AB 32 required that, by January 1, 2008, the CARB determine what the statewide GHG emissions level was in 1990, and approve a statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020. The CARB adopted its Scoping Plan, which provided estimates of the 1990 GHG emissions level and identified sectors for the reduction of GHG emissions, in December 2008. The CARB has estimated that the 1990 GHG emissions level was 427 MMT CO_2e (CARB 2009). The CARB estimates that a reduction of 173 MMT CO_2e emissions below business-as-usual would be required by 2020 to meet the 1990 levels (CARB 2009). This amounts to roughly a 30 percent reduction from projected business-as-usual levels in 2020 (CARB 2009). Under Executive Order B-30-15, the goals of AB 32 were extended to a 40 percent reduction from 2020

levels by 2030. In 2017, CARB issued their Climate Change Scoping Plan, which presented a strategy for achieving the 2030 target.

Senate Bill 97

Senate Bill (SB) 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. SB 97 directed the Governor's Office of Planning and Research to develop draft state CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009, and directed the California Natural Resources Agency to certify and adopt the state CEQA guidelines by January 1, 2010.

The Office of Planning and Research published a technical advisory on CEQA and climate change on June 19, 2008. The guidance did not include a suggested threshold, but stated that the Office of Planning and Research had asked the CARB to "recommend a method for setting thresholds which will encourage consistency and uniformity in the CEQA analysis of greenhouse gas emissions throughout the state." The Office of Planning and Research technical advisory does recommend that CEQA analyses include the following components:

- identification of greenhouse gas emissions;
- determination of significance; and
- mitigation of impacts, as needed and as feasible.

On December 31, 2009, the California Natural Resources Agency adopted the proposed amendments to the state CEQA Guidelines. These amendments became effective on March 18, 2010.

Executive Order S-21-09

Executive Order S-21-09 was enacted by the Governor on September 15, 2009. Executive Order S-21-09 requires that the CARB, under its AB 32 authority, adopt a regulation by July 31, 2010 that sets a 33 percent renewable energy target. Under Executive Order S-21-09, the CARB will work with the Public Utilities Commission and California Energy Commission to encourage the creation and use of renewable energy sources, and will regulate all California utilities. The CARB will also consult with the Independent System Operator and other load balancing authorities on the impacts on reliability, renewable integration requirements, and interactions with wholesale power markets in carrying out the provisions of the Executive Order. The order requires the CARB to establish highest priority for those resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health.

17 CCR §95350 et seq.

The purpose of this regulation is to achieve GHG emission reductions by reducing SF_6 emissions from gas-insulated switchgear. Gas-insulated switchgear owners must not exceed maximum allowable annual emissions rates, which are reduced each year until 2020, after which annual emissions must not exceed 1.0 percent. Owners must regularly inventory gas-insulated switchgear equipment and measure quantities of SF_6 and maintain records of these for at least 3 years. Additionally, by June 1, 2012, and June 1 of each year thereafter, each gas-insulated switchgear owner must submit an annual report to the Executive Officer for emissions that occurred during the previous calendar year.

State Standards Addressing Vehicular Emissions

California Assembly Bill 1493 (Pavley), enacted on July 22, 2002, required the CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Regulations adopted by the CARB would apply to 2009 and later model year vehicles. The CARB estimated that the regulation would reduce climate change emissions from light duty passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030 (AEP 2007). Overall within the state of California, implementation of the Pavley standards is anticipated to reduce GHG emissions by 17.23 percent (CARB 2013).

The CARB has adopted amendments to the Pavley regulations that reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments, approved by the CARB Board on September 24, 2009, are part of California's commitment toward a nationwide program to reduce new passenger vehicle GHGs from 2012 through 2016, and prepare California to harmonize its rules with the Federal rules for passenger vehicles.

Executive Order S-01-07

Executive Order S-01-07 was enacted by the Governor on January 18, 2007, and mandates that: 1) a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and 2) a Low Carbon Fuel Standard for transportation fuels be established for California. On April 23, 2009, the CARB adopted regulations to implement the Low Carbon Fuel Standard.

Senate Bill 375

SB 375 finds that GHG from autos and light trucks can be substantially reduced by new vehicle technology, but even so, "…it will be necessary to achieve significant additional greenhouse gas reductions from changed land use patterns and improved transportation. Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." Therefore, SB 375 requires that regions with metropolitan planning organizations adopt sustainable community strategies, as part of their regional transportation plans, which are designed to achieve certain goals for the reduction of GHG emissions from mobile sources.

Senate Bill 350

Senate Bill 350 was signed into legislation in October 2015. SB 350 requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030.

Local

Riverside County Climate Action Plan

Riverside County adopted a Climate Action Plan in December, 2015 (Riverside County 2015). The plan included completion of a GHG emissions inventory, and established a goal to reduce emissions to 1990 levels by 2020, a reduction of 15 percent below the 2008 emissions. The plan summarized the General Plan policies that also affect GHG emissions, as well as measures from AB 32 and the County related to transportation, energy, and other sources. The energy-related measures include the state's Renewable Portfolio Standard related to renewable energy production, as well as a variety of measures to encourage energy efficiency and onsite generation

of solar energy at residential and commercial buildings. The plan does not specifically address County policies related to approval of commercial-scale solar power plants.

D.9 HAZARDS AND HAZARDOUS MATERIALS

D.9.1 Regional and Background Information

Unexploded Ordnance

The Project site is located within General Patton's World War II Desert Training Center opened by the Army Ground Forces in 1942. In 1943 it was renamed California-Arizona Maneuver Area (CAMA). The CAMA was the largest military training center ever established, stretching from west of Pomona, California, to Yuma, Arizona, and north to Nevada, encompassing approximately 12 million acres. Seven camps were set up in the CAMA for divisional use and for combat and supply units. The camps were widely spaced to prevent groups from interfering with each other during training exercises, but all were interconnected with a network of railroad lines and roads. After the camps closed in 1944, efforts began to salvage material and dismantle the sites. The land was returned to private and government holdings.

The former Blythe Army Airfield is located approximately 1.5 north of the Project site. The airfield opened as Bishop Army Airfield in 1940. The airport later became a part of Muroc Army Air Field, now known as Edwards Air Force Base. The airfield was a second Army Air Forces heavy bombardment crew training base during World War II. Multiple bombardment groups were active at the airfield in 1942 and 1943, and up to 75 B-17 bombers were flown and maintained at this site. Historical records and drawings indicate that bombs and explosive materials, and possibly incendiary and pyrotechnic materials, were stored on airfield grounds in up to five magazines or bunkers. A gunnery range, skeet range, and jeep type target range, all with ammunition storage, were constructed and used by Army personnel (California State Military Museum 2008).

Pesticide Use

Pesticides are used to control living organisms that cause damage or economic loss, or that transmit or cause disease. Pests include insects, fungi, weeds, rodents, nematodes, algae, viruses, and bacteria. Pesticides include herbicides, fungicides, insecticides, rodenticides, and disinfectants, as well as insect growth regulators. In California, adjuvants (substances added to enhance the efficacy of a pesticide) also are subject to the regulations that control pesticides.

Vector-Borne Diseases

Mosquitoes and other arthropods are known to be carriers of many serious diseases. Arthropod-borne viruses ("arboviruses") are viruses that are transmitted by blood-feeding arthropods, such as mosquitoes and ticks, when they bite susceptible humans and animals. There are four main virus agents of encephalitis in the United States: eastern equine encephalitis, western equine encephalitis, St. Louis encephalitis, and La Cross encephalitis, all of which are transmitted by mosquitoes. Most human infections are asymptomatic or result in nonspecific flu-like symptoms such as fever, headache, nausea, and tiredness. However, infection may lead to encephalitis, an inflammation of the brain, with a fatal outcome or permanent neurologic damage in a small

proportion of infected persons. West Nile Virus (WNV) is closely related to the SLE virus and causes similar symptoms.

Valley Fever

Coccidioidomycosis, commonly known as valley fever, is primarily a disease of the lungs that is common in the southwestern U.S. and northwestern Mexico. Valley fever is caused by the fungus *Coccidioides*, which grows in soils in areas of low rainfall, high summer temperatures, and moderate winter temperatures. These fungal spores become airborne when the soil is disturbed by winds, construction, farming, and other activities. In susceptible people and animals, infection occurs when a spore is inhaled. Valley fever symptoms generally occur within 3 weeks of exposure. Valley fever is not a contagious disease, that is, people do not contract the disease from each other, and secondary infections are rare.

People working in certain occupations such as construction, agriculture, and archaeology have an increased risk of exposure and disease because these jobs result in the disturbance of soils where fungal spores are found. Valley fever infection is highest in California from June to November. In addition, many domestic and native animals are susceptible to the disease, including dogs, horses, cattle, coyotes, rodents, bats, sea otters, lizards, and snakes. Most valley fever cases are very mild. It is estimated that 60 percent or more of infected people either have no symptoms or experience flu-like symptoms and never seek medical attention. The disease has 1.3% mortality rate in California (CDPH 2016).

Intentionally Destructive Acts

The number and high profile of international and domestic terrorist attacks during the last decade presents a new and realistic threat to the safety and security of the people of the U.S., infrastructure, and resources. There is a potential for intentional destructive acts, such as sabotage or terrorism events, to cause impacts to human health and the environment. As opposed to industrial hazards, collisions, and natural events, where it is possible to estimate event probabilities based on historical statistical data and information, it is not possible to accurately estimate the probability of an act of terrorism or sabotage; therefore, related analysis generally focuses on the consequences of such events. In general, the consequences of a sabotage or terrorist attack on a solar facility would be expected to be similar to accidental and natural events that could result in an interruption of power service, fire, or hazardous materials release.

The Department of Homeland Security Interim Final Rule setting forth Chemical Facility Anti-Terrorism Standards (6 CFR Part 27) requires facilities that use or store certain hazardous materials to conduct vulnerability assessments and implement certain specified security measures. Although the proposed facility would not be covered by the standards, the BLM's position is that the Applicant should implement a minimum level of security consistent with the Standards. The DOE published a draft Vulnerability Assessment Methodology for Electric Power Infrastructure in 2002 (DOE 2002). Energy sector members also are leading a significant voluntary effort to increase planning and preparedness, including infrastructure protection and cyber security. The North American Electric Reliability Corporation (NERC) has established a Critical Infrastructure Protection Program to coordinate and improve physical and cybersecurity for the bulk power system of North America as it relates to reliability (NERC 2014).

D.9.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

Comprehensive Environmental Response and Liability Act and Superfund Amendments and Reauthorization Act

The Superfund Amendments and Reauthorization Act (SARA) amended the Comprehensive Environmental Response and Liability Act (CERCLA) and governs hazardous substances. The applicable part of SARA is Title III, otherwise known as the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA). EPCRA establishes requirements for Federal, state, and local governments, as well as Indian Tribes and industry members regarding emergency planning and reporting on hazardous and toxic chemicals (USEPA, 2000). Key sections of the law include:

***§304*:** Requires immediate notification to the local emergency planning committee (LEPC) and the state emergency response commission (SERC) when a hazardous material is released in excess of its reportable quantity (RQ). If a CERCLA-listed hazardous substance RQ is released, notification must also be given to the National Response Center in Washington, D.C. (RQs are listed in 40 CFR Part 302, Table 302.4). These notifications are in addition to notifications given to the local emergency response team or fire personnel.

***§311*:** Requires that either material safety data sheets (MSDSs) for all hazardous materials or a list of all hazardous materials be submitted to the SERC, LEPC, and local fire department.

Clean Air Act

Regulations under the CAA are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store a Threshold Quantity (TQ) or greater of listed regulated substances to develop a Risk Management Plan (RMP), including hazard assessments and response programs to prevent accidental releases of listed chemicals. The list of regulated substances and their threshold quantities is found under Section 112(r) of the Clean Air Act.

Hazardous Materials Transport Act

The U.S. Department of Transportation (USDOT), in conjunction with the USEPA, is responsible for enforcement and implementation of Federal laws and regulations pertaining to transportation of hazardous materials. The Hazardous Materials Transportation Act of 1974 directs the USDOT to establish criteria and regulations regarding the safe storage and transportation of hazardous materials. 49 CFR Parts 171–180 regulate the transportation of hazardous materials, the types of material that are defined as hazardous, and the marking of vehicles transporting hazardous materials.

Federal Water Pollution Control Act (Clean Water Act)

The CWA is a comprehensive statute focused on restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. Originally enacted in 1948, the CWA was amended numerous times until it was reorganized and expanded in 1972. It continues to be amended almost on an annual basis.

Primary authority for the implementation and enforcement of the CWA rests with the EPA. The CWA authorizes water quality programs, requires Federal effluent limitations and state water quality standards, requires permits for the discharge of pollutants into navigable waters, provides

enforcement mechanisms, and authorizes funding for wastewater treatment works construction grants and state revolving loan programs, as well as funding to states and Tribes for their water quality programs. Provisions have also been added to address water quality problems in specific regions and specific waterways. The Project would be subject to a National Pollutant Discharge Elimination System (NPDES) Construction General Permit during construction and a General Industrial Permit during operations and maintenance to address water quality.

Resource Conservation and Recovery Act of 1976 (42 U.S.C. § 6901 et seq.)

The RCRA grants authority to the EPA to control hazardous waste from start to finish. This covers the production, transportation, treatment, storage, and disposal of hazardous waste. The RCRA also sets forth a framework for the management of non-hazardous solid waste. The 1986 amendments to the RCRA enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.

Occupational Safety and Health Act

Congress passed the Occupational Safety and Health Act (OSHA) to ensure safe and healthful working conditions for working men and women. OSHA authorized enforcement of the standards developed under the Act and assisted states in their efforts to ensure safe and healthful working conditions. OSHA also provides for research, information, education, and training in the field of occupational safety and health. The Project would be subject to OSHA requirements during construction, operations and maintenance, and decommissioning.

Federal Aviation Administration Regulations Part 77

Federal Aviation Administration (FAA) regulations, 14 CFR Part 77, establish standards and notification requirements for objects affecting navigable airspace. This notification serves as the basis for evaluating the effects of construction or alteration on operating procedures; determining the potential hazardous effect of the proposed construction on air navigation; identifying mitigation measures to enhance safe air navigation; and charting of new objects.

These regulations apply to the following:

- Any construction or alteration exceeding 200 feet above ground level;
- Any construction or alteration:
  - within 20,000 feet of a public use or military airport that exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 feet long
  - within 10,000 feet of a public use or military airport that exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 feet long
  - within 5,000 feet of a public use heliport that exceeds a 25:1 surface;
  - Any highway, railroad or other traverse way whose prescribed adjusted height would exceed the above-noted standards:
  - when requested by the FAA; and
  - any construction or alteration located on a public use airport or heliport regardless of height or location.

Western Electricity Coordinating Council (WECC)

There are no health-based Federal regulations or industry codes specifying environmental limits on the strengths of fields from power lines. However, the Western Electricity Coordinating Council (WECC), a regional entity responsible for promoting and coordinating bulk electric system reliability in the western United States, has adopted a policy to separate parallel transmission lines within a common corridor by the greatest of 500 feet or the length of the longest span (distance between adjacent transmission structures).

State

Safe Drinking Water and Toxics Enforcement Act

The Safe Drinking Water and Toxics Enforcement Act (Health and Safety Code §25249.5 et seq.) identifies chemicals that cause cancer and reproductive toxicity, provides information for the public, and prevents discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated periodically. The Act is administered by California's Office of Environmental Health Hazard Assessment (OEHHA).

Aboveground Petroleum Storage Act

Assembly Bill 1130 (2007) updated the Aboveground Petroleum Storage Act of 1990 (Health and Safety Code §§25270 to 25270.13) and requires the owner or operator of a tank facility with an aggregate storage capacity greater than 1,320 gallons of petroleum to file an inventory statement with the local Certified Unified Program Agency (CUPA) and to prepare an SPCC plan. An SPCC plan must identify appropriate spill containment or equipment for diverting spills from sensitive areas, as well as discuss facility-specific requirements for the storage system, inspections, recordkeeping, security, and personnel training.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act (Health and Safety Code §25500 *et seq*.; 19 CCR §2620, *et seq*.), requires local governments to regulate local businesses using hazardous materials in excess of certain quantities to prepare a Hazardous Materials Business Plan (HMBP) that describes their facilities, inventories, emergency response plans, and training programs to their local CUPA and to report releases to their CUPA and the California Office of Emergency Services. Hazardous materials are defined as unsafe raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste. HMBPs shall include the following: (1) a hazardous material inventory in accordance with 19 CCR §§2729.2 to 2729.7; (2) emergency response plans and procedures in accordance with 19 CCR §2731; and (3) training program information in accordance with 19 CCR §2732. Business plans contain basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the state. Each business shall prepare a HMBP if that business uses, handles, or stores a hazardous material or an extremely hazardous material in quantities greater than or equal to the following:

1. 500 pounds of a solid substance,
2. 55 gallons of a liquid,

3. 200 cubic feet of compressed gas,
4. A hazardous compressed gas in any amount, and
5. Hazardous waste in any quantity.

Health and Safety Code §25531

This code section and the California Accidental Release Program (CalARP) regulate the registration and handling of regulated substances. Regulated substances are any chemicals designated as an extremely hazardous substance by the USEPA as part of its implementation of SARA Title III. Health and Safety Code §25531 overlaps or duplicates some of the requirements of SARA and the CAA. Facilities handling or storing regulated substances at or above Threshold Planning Quantities must register with their local CUPA and prepare an RMP.

8 CCR §5189

This regulation requires facility owners that store a TQ of hazardous materials to develop and implement effective safety management plans that ensure that hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.

Health and Safety Code §41700

This code section states, "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."

Hazardous Waste Control Law

The Hazardous Waste Control Law (HWCL) (Health and Safety Code §§25100-25249) created the state hazardous waste management program, which is similar to but more stringent than the Federal RCRA program. The act is implemented by regulations contained in 22 CCR §66250 et seq., which describes the following required aspects for the proper management of hazardous waste:

1. Identification and classification;
2. Generation and transportation;
3. Design and permitting of recycling, treatment, storage, and disposal facilities;
4. Treatment standards;
5. Operation of facilities and staff training; and
6. Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the HWCL and its implementing regulations, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with the DTSC.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)

This program requires the administrative consolidation of six hazardous materials and waste programs (Program Elements) under one agency, a CUPA. The Program Elements consolidated under the Unified Program are:

1. Hazardous Waste Generator and On-site Hazardous Waste Treatment Programs (a.k.a., Tiered Permitting),
2. Aboveground Petroleum Storage Tank SPCC,
3. Hazardous Materials Release Response Plans and Inventory Program (a.k.a. Hazardous Materials Disclosure or "Community-Right-To-Know"),
4. CalARP,
5. Underground Storage Tank (UST) Program, and
6. Uniform Fire Code Plans and Inventory Requirements.

The Unified Program is intended to provide relief to businesses complying with the overlapping and sometimes conflicting requirements of formerly independently managed programs. The Unified Program is implemented at the local government level by CUPAs. Most CUPAs have been established as a function of a local environmental health or fire department. Some CUPAs have contractual agreements with another local agency, a participating agency, which implements one or more Program Elements in coordination with the CUPA. The Riverside County Department of Environmental Health is the CUPA in the Project area.

California Environmental Protection Agency

The California Environmental Protection Agency (CalEPA) and the State Water Resources Control Board establish rules governing the use of hazardous materials and the management of hazardous waste. Applicable state and local laws include the following:

- Public Safety/Fire Regulations/Building Codes
- Hazardous Waste Control Law
- Hazardous Substances Information and Training Act
- Air Toxics Hot Spots and Emissions Inventory Law
- Underground Storage of Hazardous Substances Act
- Porter-Cologne Water Quality Control Act

Department of Toxic Substance Control

The Department of Toxic Substances Control (DTSC) has primary regulatory responsibility for the management of hazardous materials and the generation, transport, and disposal of hazardous waste under the authority of the Hazardous Waste Control Law. Enforcement is delegated to local jurisdictions that enter into agreements with the DTSC.

California's Secretary of Environmental Protection established a unified hazardous waste and hazardous materials management regulatory program as required by Health and Safety Code

Chapter 6.11. The unified program consolidates, coordinates, and makes consistent portions of the following six existing programs:

- Hazardous Waste Generations and Hazardous Waste On-site Treatment
- Underground Storage Tanks
- Hazardous Material Release Response Plans and Inventories
- California Accidental Release Prevention Program
- Aboveground Storage Tanks (spill control and countermeasure plan only)
- Uniform Fire Code Hazardous Material Management Plans and Inventories

The statute requires all counties to apply to the CalEPA Secretary for the certification of a local unified program agency. Qualified cities are also permitted to apply for certification. The local Certified Unified Program Agency (CUPA) is required to consolidate, coordinate, and make consistent the administrative requirements, permits, fee structures, and inspection and enforcement activities for these six program elements within the county. Most CUPAs have been established as a function of a local environmental health or fire department.

The Office of the State Fire Marshal participates in all levels of the CUPA program including regulatory oversight, CUPA certifications, evaluations of the approved CUPAs, training, and education. The Riverside County Department of Environmental Health serves as the CUPA in Riverside County.

California Office of Emergency Services

In order to protect the public health and safety and the environment, the California Office of Emergency Services is responsible for establishing and managing statewide standards for business and area plans relating to the handling and release or threatened release of hazardous materials. Basic information on hazardous materials handled, used, stored, or disposed of (including location, type, quantity, and the health risks) needs to be available to firefighters, public safety officers, and regulatory agencies. Such information needs to be included in business plans in order to prevent or mitigate the damage to the health and safety of persons and the environment from the release or threatened release of these materials into the workplace and environment.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. Cal/OSHA standards are generally more stringent than Federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings.

California Highway Patrol

A valid Hazardous Materials Transportation License, issued by the California Highway Patrol, is required by the laws and regulations of Vehicle Code §3200.5 for transportation of either:

1. Hazardous materials shipments for which the display of placards is required by state regulations; or
2. Hazardous materials shipments of more than 500 pounds, which would require placards if shipping greater amounts in the same manner.

Additional requirements on the transportation of explosives, inhalation hazards, and radioactive materials are enforced by the California Highway Patrol under the authority of the Vehicle Code. Transportation of explosives generally requires consistency with additional rules and regulations for routing, safe stopping distances, and inspection stops (14 CCR §§1150-1152.10). Inhalation hazards face similar, more restrictive rules and regulations (13 CCR §§1157-1157.8). Radioactive materials are restricted to specific safe routes for transportation of such materials.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to but more stringent than the Federal RCRA program. The act is implemented by regulations contained in Title 26 of the CCR, which describes the following required aspects for the proper management of hazardous waste:

- identification and classification;
- generation and transportation;
- design and permitting of recycling, treatment, storage, and disposal facilities;
- treatment standards;
- operation of facilities and staff training; and
- closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the Hazardous Waste Control Act and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with the DTSC.

CPUC Rules for Overhead Electric Line Construction, General Order No. 95 (GO-95)

CPUC General Order No. 95 specifies requirements for overhead line design, construction, and maintenance, the application of which is intended to ensure adequate service and secure safety to persons engaged in the construction, maintenance, operation or use of overhead lines and to the public in general.

Local

Riverside County Airport Land Use Compatibility Plan

The Project would be located within the area covered by the RCALUCP, within Zones D and E of the AIA. The RCALUCP sets forth the criteria and policies that the Riverside County ALUC uses in assessing the compatibility between the principal airports in Riverside County and proposed land use development in the areas surrounding them. The RCALUCP primarily deals with review of local general plans, specific plans, zoning ordinances, and other land use documents covering broad geographic areas. Certain individual land use development proposals

also may be reviewed by the ALUC as provided in the policies identified in the RCALUCP. The ALUC does not have authority over existing incompatible land uses or the operation of any airport.

The ALUC adopts Airport Land Use Compatibility Plans for the areas surrounding the airports within its jurisdiction. Local development approvals must be found consistent with the RCALUCP unless approved by a 4/5th supermajority vote. The RCALUCP identifies AIAs to protect the public from the adverse effects of aircraft noise, ensure that facilities and people are not concentrated in areas susceptible to aircraft accidents, and ensure that no structures or activities adversely affect or encroach upon the use of navigable airspace (ALUC 2012). The Compatibility Plan for Blythe Airport is based upon the Airport Master Plan adopted by the Riverside County Board of Supervisors in 2001.

The following RCALUCP county-wide policies are applicable to the proposed Project:

Policy 1.5.3. Major Land Use Actions: The scope or character of certain major land use actions, as listed below, is such that their compatibility with airport activity is a potential concern. Even though these actions may be basically consistent with the local general plan or specific plan, sufficient detail may not be known to enable a full airport compatibility evaluation at the time that the general plan or specific plan is reviewed. To enable better assessment of compliance with the compatibility criteria set forth herein, ALUC review of these actions may be warranted. The circumstances under which ALUC review of these actions is to be conducted are indicated in Policy 1.5.2 above.

1. Actions affecting land uses within any compatibility zone.
    - Any proposed expansion of the sphere of influence of a city or special district.
    - Proposed pre-zoning associated with future annexation of land to a city.
    - Proposed development agreements or amendments to such agreements.
    - Proposed residential development, including land divisions, consisting of five or more dwelling units or lots.
    - Any discretionary development proposal for projects having a building floor area of 20,000 square feet or greater unless only ministerial approval (e.g., a building permit) is required.
    - Major capital improvements (e.g., water, sewer, or roads) which would promote urban uses in undeveloped or agricultural areas to the extent that such uses are not reflected in a previously reviewed general plan or specific plan.
    - Proposed land acquisition by a government entity for any facility accommodating a congregation of people (for example, a school or hospital).
    - Any off-airport, non-aviation use of land within Compatibility Zone A of any airport.
    - Proposals for new development (including buildings, antennas, and other structures) having a height of more than:
        - 35 feet within Compatibility Zone B1, B2, or a Height Review Overlay Zone;
        - 70 feet within Compatibility Zone C; or

- 150 feet within Compatibility Zone D or E.

- Any obstruction reviewed by the Federal Aviation Administration in accordance with Part 77 of the Federal Aviation Regulations that receives a finding of anything other than "not a hazard to air navigation."
- Any project having the potential to create electrical or visual hazards to aircraft in flight, including:
  - Electrical interference with radio communications or navigational signals;
  - Lighting which could be mistaken for airport lighting;
  - Glare in the eyes of pilots of aircraft using the airport; and
  - Impaired visibility near the airport.
- Projects having the potential to cause attraction of birds or other wildlife that can be hazardous to aircraft operations to be increased within the vicinity of an airport.

2. Proposed non-aviation development of airport property if such development has not previously been included in an airport master plan or community general plan reviewed by the Commission. (See Policy 1.2.5 for definition of aviation-related use.)
3. Regardless of location within Riverside County, any proposal for construction or alteration of a structure (including antennas) taller than 200 feet above the ground level at the site. (Such structures also require notification to the Federal Aviation Administration in accordance with Federal Aviation Regulations, Part 77, Paragraph 77.13(a) (1).)
4. Any other proposed land use action, as determined by the local planning agency, involving a question of compatibility with airport activities.

Policy 3.1.4. Nonresidential Development: The compatibility of nonresidential development shall be assessed primarily with respect to its usage intensity (the number of people per acre) and the noise-sensitivity of the use. Additional criteria listed in Table 2A shall also apply.

a) The total number of people permitted on a project site at any time, except for rare special events, must not exceed the indicated usage intensity times the gross acreage of the site.
   1) Usage intensity calculations shall include all people (e.g., employees, customers/ visitors, etc.) who may be on the property at any single point in time, whether indoors or outside.
   2) Rare special events are ones (such as an air show at an airport) for which a facility is not designed and normally not used and for which extra safety precautions can be taken as appropriate.

b) No single acre of a project site shall exceed the number of people per acre indicated in Policy 4.2.5(b) and listed in Table 2A unless special risk reduction building design measures are taken as described in Policy 4.2.6.

c) The noise exposure limitations cited in Policy 4.1.4 and listed in Table 2B shall be the basis for assessing the acceptability of proposed nonresidential land uses relative to noise impacts. The ability of buildings to satisfy the interior noise level criteria noted in Policy 4.1.6 shall also be considered.

Policy 3.1.5. Prohibited Uses: Regardless of usage intensity, certain types of uses are deemed unacceptable within portions of an airport influence area. See Policy 4.2.3 and Table 2A. In addition to these explicitly prohibited uses, other uses will normally not be permitted in the respective compatibility zones because they do not meet the usage intensity criteria.

Policy 3.1.6. Other Development Conditions: All types of proposed development shall be required to meet the additional conditions listed in Table 2A for the respective compatibility zone where the development is to be located. Among these conditions are the following:

a) Aviation Easement Dedication: See Policy 4.3.5.

b) Deed Notice: See Policy 4.4.3.

c) Real Estate Disclosure: See Policy 4.4.2.

d) Noise Level Reduction: See Policy 4.1.6.

e) Airspace Review: See Policy 4.3.3.

Policy 4.3.7. New land uses that may cause visual, electronic, or increased bird strike hazards to aircraft in flight shall not be permitted within any airport's influence area.

Riverside County General Plan

The Riverside County General Plan (Riverside County 2015a) Safety Element provides policies for development of the Project area within Riverside County. In compliance with state law, the primary objective of the Safety Element is to "reduce death, injuries, property damage, and economic and social impact from hazards." Countywide policies that address health and safety within the County boundaries are also located in the Land Use Element of the County General Plan.

Hazardous Waste and Materials – Hazardous Waste Management Plan

Policy S 7.3. Require commercial businesses, utilities, and industrial facilities that handle hazardous materials to:

- Install automatic fire and hazardous materials detection, reporting and shut -off devices; and
- Install an alternative communication system in the event power is out or telephone service is saturated following an earthquake.

Land Use Element (LU)

Policy LU 15.9. Ensure that no structures or activities encroach upon or adversely affect the use of navigable airspace.

Riverside County Hazardous Waste Management Plan

The Riverside County Hazardous Waste Management Plan (CHWMP) uses a framework of 24 existing and recommended programs. The CHWMP serves as the County's primary planning document for the management of hazardous substances. Although the title refers only to hazardous waste, the CHWMP is a comprehensive document containing all of the County programs for managing both hazardous materials and waste.

Southern California Hazardous Waste Management Authority

The SCHWMA was formed through a joint powers agreement between Santa Barbara, Ventura, San Bernardino, Orange, San Diego, Imperial, and Riverside Counties and the Cities of Los Angeles and San Diego. Each SCHWMA county has agreed to take responsibility for the treatment and disposal of hazardous waste in an amount that is at least equal to the amount generated within that county. This responsibility can be met by siting hazardous waste management facilities (transfer, treatment, and/or repository) capable of processing an amount of waste equal to or larger than the amount generated within the county, or by creating intergovernmental agreements between counties to provide compensation to a county for taking another county's waste, or through a combination of both facility siting and intergovernmental agreements. When and where a facility is to be sited is primarily a function of the private market. However, once an application to site a facility has been received, the county will review the requested facility and its location against a set of established siting criteria to ensure that the location is appropriate, and may deny the application based on the findings of this review. The County of Riverside does not presently have any of these facilities within its jurisdiction and therefore must rely on intergovernmental agreements to fulfill its fair share responsibility to SCHWMA.

Riverside County Department of Environmental Health

The Riverside County Department of Environmental Health, under the Health and Safety Code, is responsible for oversight of activities pertaining to the generation, storage, handling, disposal, treatment, and recycling of hazardous waste. Ordinance No. 615.3 has been implemented for the purpose of monitoring establishments where hazardous waste is generated, stored, handled, disposed, treated, or recycled and to regulate the issuance of permits and the activities of establishments where hazardous waste is generated. The Department of Environmental Health also contains a Hazardous Materials Management Branch, which is the CUPA for the entire County, and oversees all hazardous materials and hazardous waste-related activities.

D.10 LANDS, REALTY, AND AGRICULTURAL AND FORESTRY RESOURCES

D.10.1 Regional and Background Information

BLM Land Use Designations

CDCA Plan

The CDCA encompasses 25 million acres in southern California designated by Congress in 1976 through the FLPMA. The BLM manages about 10 million of those acres. Congress directed the BLM to prepare and implement a comprehensive long-range plan for the management, use, development, and protection of public lands within the CDCA. The CDCA Plan (BLM 1980, as amended) is based on the concepts of multiple-use, sustained yield, and maintenance of environmental quality. The CDCA Plan provides overall regional guidance for BLM-administered lands in the CDCA and establishes long-term goals for protection and use of the California desert.

The CDCA Plan developed a classification system that places BLM-administered public lands in the CDCA into one of four Multiple-Use Classes, based on the sensitivity of the resources and types of uses for each geographic area.

Desert Renewable Energy Conservation Plan

BLM issued the DRECP in September 2016. The DRECP amends the CDCA Plan, specifically with respect to natural resource conservation and renewable energy development. The DRECP establishes Ecological and Cultural Conservation and Recreation Designations, and Renewable Energy Activities, Policies, and Allocations. These land use designations replace the Multiple-Use Classes that were previously in effect under the CDCA Plan. In addition, the DRECP establishes Visual Resource Management (VRM) Classifications.

D.10.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

Federal Land Policy and Management Act, 1976 as Amended

The United States Congress passed the FLPMA in 1976. Title V, "Rights-of-Way," of the FLPMA establishes public land policy and guidelines for administration, provides for management, protection, development, and enhancement of public lands, and provides the BLM authorization to grant ROW. Authorization of systems for generation, transmission, and distribution of electric energy is addressed in Section 501(4) of Title V. In addition, Section 503 specifically addresses "Right of Way Corridors" and requires common ROWs "to the extent practical." FLPMA, Title V, Section 501(a)(6) states, "[t]he Secretary, with respect to the public lands (including public lands, as defined in section 103(e) of this Act, which are reserved from entry pursuant to section 24 of the Federal Power Act (16 U.S.C. § 818)) [P.L. 102-486, 1992] and, the Secretary of Agriculture, with respect to lands within the National Forest System (except in each case land designated as wilderness), are authorized to grant, issue, or renew rights-of-way over, upon, under, or through such lands for roads, trails, highways, railroads, canals, tunnels, tramways, airways, livestock driveways, or other means of transportation except where such facilities are constructed and maintained in connection with commercial recreation facilities on lands in the National Forest System."

The Applicant is seeking a ROW grant from the BLM Palm Springs-South Coast Field Office Authorized Officer to authorize the construction, operation, maintenance and decommissioning of a proposed solar facility and gen-tie line on land under the jurisdiction of the BLM.

California Desert Conservation Area Plan, 1980 as Amended

Section 601 of the FLPMA required preparation of a long range plan for the CDCA. The CDCA Plan was adopted in 1980 to provide for the use of public lands and resources of the CDCA in a manner that enhances, wherever possible, and does not diminish, on balance, the environmental, cultural, and aesthetic values of the Desert and its productivity. The CDCA Plan is a comprehensive, long range plan covering 25 million acres. Approximately 10 million acres (about half) of this total are public lands administered by the BLM. These public lands are dispersed throughout the California Desert, which includes the Mojave Desert, the Sonoran Desert, and a small portion of the Great Basin Desert.

The CDCA Plan includes 12 elements: Cultural Resources; Native American; Wildlife; Vegetation; Wilderness; Wild Horse and Burro; Livestock Grazing; Recreation; Motorized Vehicle Access; Geology, Energy and Mineral Resources; Energy Production and Utility Corridors; and Land Tenure Adjustment. Each of the elements contains goals and specific

actions for the management, use, development, and protection of the resources and public lands within the CDCA, and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. In addition, each element provides both a desert wide perspective of the planning decisions for one major resource or issue of public concern as well as more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.

Programmatic Environmental Impact Statement to Develop and Implement Agency-Specific Programs for Solar Energy Development

In response to direction from Congress under Title II, Section 211 of the Energy Policy Act of 2005, as well as Executive Order 13212, Actions to Expedite Energy-Related Projects, the BLM and the U.S. Department of Energy have prepared a Solar Programmatic EIS (PEIS) pursuant to NEPA and CEQ regulations. The Solar PEIS evaluates utility-scale solar energy development in a six-state area, including that portion of the CDCA that is open to solar energy development in accordance with the provisions of the CDCA Plan. The Solar PEIS planning effort has focused on identifying locations on BLM lands that are most suitable for solar energy development. The entire Project would be located within BLM-managed lands and within the Riverside East SEZ. The Final Solar PEIS was released on July 24, 2012. The BLM issued a Record of Decision on October 12, 2012, that amended the CDCA Plan to identify all SEZ lands within the CDCA as sites associated with power generation or transmission (BLM 2012c).

Resource Management Plan/Record of Decision for Designation of Energy Corridors on Bureau of Land Management Administered Lands in the 11 Western States

Section 368 of the EPAct (Public Law 109-58) requires the DOI to examine and designate energy transportation corridors in the West. In response, the BLM issued the "Approved Resource Management Plan Amendments/Record of Decision (ROD) for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States" (BLM 2009) which designated §368 Corridors in the western United States. Section 368 corridors are identified with a numeric designation and are often overlain on locally designated corridors, as is the case with the east-west §368 2-mile wide Corridor 30-52 overlying Corridor K.

Appendix B to the ROD specifies Interagency Operating Procedures (IOPs) to meet the Section 368 requirement to improve the ROW application process and to meet NEPA requirements to provide practicable means to avoid or minimize environmental harm which may result from future ROW grants within the designated corridors. The IOPs specify regulatory compliance, agency coordination, government-to-government consultation, project design, and resource-specific considerations that must be addressed through NEPA analysis of the proposed use of the corridor.

Local

Land use and planning decisions for the 160-acre private inholding, and for non-BLM lands adjacent to the Project area, are guided and regulated by the Riverside County General Plan, PVVAP, and Riverside County Zoning Ordinance. The relevant plans contain goals, policies, and implementation measures that provide an overall foundation for establishing land use patterns. This section lists relevant goals, objectives, policies, and implementation measures related to the proposed land use. The Riverside County Zoning Ordinance contains regulations through which the applicable General Plan's provisions are implemented. The ALUCP establishes procedures and criteria by which the County can address compatibility issues when

making planning decisions concerning airports. The most relevant regulations pertaining to solar energy development are presented below.

Riverside County General Plan

Adoption of the 2003 Riverside County General Plan (RCGP) occurred on October 7, 2003, with revisions in 2008 and 2015 (Riverside County 2015a). The RCGP consists of a vision statement and the following elements: Land Use, Circulation, Multi-purpose Open Space, Safety, Noise, Housing, Air Quality, and Administration. The RCGP sets forth County land use policies and guidance for implementation. The RCGP is augmented by more detailed Area Plans covering the County's territory. Area Plans provide a clear and more focused opportunity to enhance community identity within the County and stimulate quality of life at the community level.

RCGP land use designations adjacent to the Project area include Agriculture (AG) and Open Space Rural (OS-RUR). The Agriculture land use designation is established to help conserve productive agricultural lands within the County. These include row crops, nurseries, citrus groves and vineyards, dairies, ranches, poultry and hog farms, and other agriculture-related uses. Areas designated AG generally lack an infrastructure that is supportive of urban development. This land use designation allows one single-family residence per 10 acres except as otherwise specified by a policy or an overlay. The OS-RUR designation is applied to remote, privately owned open space areas with limited access and a lack of public services. This land use designation allows one single family residence per 20 acres. Mineral extraction is also allowed subject to an approved surface mining permit and provided that the proposed project is consistent with the maintenance of scenic resources and views from residential neighborhoods and major roadways and the project does not detract from efforts to protect endangered species (Riverside County 2015a).

Policies at the General Plan and Area Plan levels implement the vision and goals of Riverside County. The County of Riverside Vision details the physical, environmental, and economic qualities that the County aspires to achieve by the year 2020. Using that Vision as the primary foundation, the RCGP establishes policies for development and conservation within the entire unincorporated County territory (Riverside County 2015a). The General Plan's policy goals that are potentially relevant to land use for the Project are provided below. Additional County of Riverside General Plan policy goals are detailed in other sections of this chapter, as applicable to the environmental resource topic analyzed.

Land Use Element (LU)

Policy LU 1.8. As required by the Airport Land Use Law, submit certain proposed actions to the Riverside County Airport Land Use Commission for review. Such actions include proposed amendments to the general plan, area plans, or specific plans, as well as proposed revisions to the zoning ordinance and building codes.

Policy LU 5.1. Ensure that development does not exceed the ability to adequately provide supporting infrastructure and services, such as libraries, recreational facilities, educational and child day care centers (i.e. infant, toddlers, preschool and school age children), transportation systems, and fire/police/medical services.

Policy LU 9.2. Require that development protect environmental resources by compliance with the Multipurpose Open Space Element of the General Plan and Federal and state regulations such as CEQA, NEPA, the Clean Air Act, and the Clean Water Act.

Policy LU 17.2. Permit and encourage, in an environmentally and fiscally responsible manner, the development of renewable energy resources and related infrastructure, including but not limited to, the development of solar power plants in the County of Riverside.

Multi-Purpose Open Space Element (OS)

Policy OS 15.2. Development of renewable resources should be encouraged.

Palo Verde Valley Area Plan

The Project is located on the Palo Verde Mesa in the Palo Verde Valley area within unincorporated Riverside County. The Project is within the planning area for the PVVAP. The PVVAP provides customized direction specifically for this easternmost reach of the County. The PVVAP guides the evolving character of the agricultural and desert area. The PVVAP focus is on the Colorado River and is anchored in the City of Blythe. The PVVAP planning area is bordered by Imperial County on the south, desert lands on the north and west, and the Colorado River on the east. The PVVAP is an extension of the RCGP and vision. The PVVAP's policy goals most relevant to the Project are provided in Sections 3.19 *Visual Resources*, 3.7 *Geology and Soil Resources*, and 3.14 *Recreation and Public Access*.

Riverside County Land Use Ordinance

Ordinance No. 348.4596 amends Ordinance No. 348 to authorize solar power plants on lots ten acres or larger, subject to a conditional use permit in the following zone classifications: General Commercial (C-1/C-P), Commercial Tourist (C-T), Scenic Highway Commercial (C-P-S), Rural Commercial (C-R), Industrial Park (I-P), Manufacturing Servicing Commercial (M-SC), Medium Manufacturing (M-M), Heavy Manufacturing (M-H), Mineral Resources (M-R), Mineral Resource and Related Manufacturing (M-R-A), Light Agriculture (A-1), Light Agriculture with Poultry (A-P), Heavy Agriculture (A-2), Agriculture-Dairy (AD), Controlled Development (W-2), Regulated Development Areas (R-D), Natural Assets (N-A), Waterways and Watercourses (W-1), and Wind Energy Resource Zone (W-E). Ordinance No. 348.4596 was last updated in 2010.

The proposed solar facility site would be located on BLM-managed lands in unincorporated Riverside County. Lands adjacent to the Project are currently zoned as Controlled Development Areas (W-2-10), including the privately-owned inholding within the Project area (Riverside County 2015b).

D.11 MINERAL RESOURCES

D.11.1 Regional and Background Information

Riverside County contains diverse mineral resources, which include extensive deposits of clay, limestone, iron, sand, and aggregates. Geologic and economic factors restrict mining operations to the relatively few locations where mineral extraction is feasible.

The BLM groups minerals on Federal lands into three distinct categories: (1) locatable resources (subject to the General Mining Law of 1872, as amended); (2) leasable resources (subject to various Mineral Leasing Acts); and (3) mineral materials resources (subject to disposal (contract sale or free-use permit) under the Materials Act of 1947, as amended) (BLM 2011). Locatable minerals include metals such as gold, silver, copper and zinc, and certain non-metallic mineral

resources including high-grade limestone, gypsum, and gems and semi-precious stones. Leasable minerals include oil, gas, coal, potash, salt and geothermal resources. Mineral materials include common variety of earth materials such as sand, stone, and gravel (BLM 2010).

The Palo Verde Area Plan does not designate any areas within its boundaries for Open Space – Mineral Resources (Riverside County 2015b).

D.11.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

General Mining Act of 1872 as amended

This act (30 U.S.C. 22-42) Codified the system of acquiring and protecting mining claims on public land open to mineral entry and obtaining patent (fee simple title) to valid mining claims.

Mineral Leasing Act of 1920 as amended

Authorizes and governs leasing of public lands for developing deposits of coal, petroleum, natural gas and certain solid minerals (phosphates, sodium, sulfur, and potassium) (30 U.S.C. § 181 et seq.).

Surface Resources Act of 1955

This act (30 U.S.C. 612) exempts common-variety minerals such as gravel, sand, building stone, volcanic cinder, petrified wood etc. from location under the General Mining Act of 1872.

Geothermal Steam Act of 1970

Allows leasing of public lands for the development of Geothermal Resources (30 U.S.C. 1001–1028)

Mining and Mineral Policy Act of 1970

This act (30 USC §21 et seq.) declared that the policy of the Federal government is to encourage private enterprise in the development of a sound and stable domestic mineral industry and in orderly and economic development of mineral resources, research, and reclamation methods.

California Desert Conservation Area Plan, 1980 as Amended

The CDCA Plan defines multiple-use classes for BLM-managed lands within the CDCA, which includes land area encompassing the Project site. With respect to mineral resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development. The Project site is located within lands designated "Class M," or moderate use. Mineral exploration and development is allowed on Class M lands provided that NEPA requirements are met.

Public Land Order No. 7818

Under Public Land Order No. 7818, the Riverside East SEZ was withdrawn from location and entry under the United States mining laws, subject to valid existing rights, for a period of 20 years (Federal Register Vol. 78, No. 129, Pg. 40499, July 5, 2013). The lands remain open to mineral and geothermal leasing, and mineral material sales.

43 CFR § 3100 – 3120 (Competitive and non-Competitive Oil and Gas Leasing)

43 CFR § 3200 (Geothermal Resource Leasing)

43 CFR § 3600 (Mineral Materials Disposal)

43 CFR § 3715 (Use and Occupancy of Mining Claims)

43 CFR § 3809 (Surface Management)

State

State Surface Mining and Reclamation Act of 1975

The Surface Mining and Reclamation Act of 1975 (PRC §2710 et seq.) mandated the initiation by the State Geologist of mineral land classification in order to help identify and protect mineral resources in areas within the state subject to urban expansion or other irreversible land uses that would preclude mineral extraction. The Surface Mining and Reclamation Act also allowed the State Mining and Geology Board, after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or statewide significance. Mineral lands are mapped according to jurisdictional boundaries (i.e., counties), mapping all mineral commodities at one time in the area, using the California Mineral Land Classification System.

The objective of classification and designation processes is to ensure, through appropriate lead agency policies and procedures, that mineral deposits of statewide or of regional significance are available when needed. The State Mining and Geology Board, based on recommendations from the State Geologist and public input, prioritizes areas to be classified and/or designated. Areas that are generally given highest priority are those areas within the state that are subject to urban expansion or other irreversible land uses that would preclude mineral extraction.

Classification is completed by the State Geologist in accordance with the State Mining and Geology Board's priority list, into MRZs, as defined below. Classification of these areas is based on geologic and economic factors without regard to existing land use and land ownership. As stated above, the Project area and vicinity have been classified as MRZ-4 for mineral resources and are not designated as being of regional or state-wide importance. MRZ-4 is defined as areas where geologic information does not rule out either the presence or absence of mineral resources. It must be emphasized that MRZ-4 classification does not imply that there is little likelihood for the presence of mineral resources, but rather there is a lack of knowledge regarding mineral occurrence.

Local

Riverside County uses the SMGB Mineral Resource Zone classifications, the designation of Aggregate Mineral Resource areas, and a County designation for Open Space – Mineral Resources in its General Plan. The Plan does not designate any areas within the Palo Verde Valley area for Open Space – Mineral Resources (Riverside County 2015b).

D.12 NOISE

D.12.1 Regional and Background Information

General Information on Noise

Noise can be defined as unwanted sound. Human response to noise is most commonly expressed as an annoyance, the level of which may be affected by the amplitude (intensity or energy content) of the noise, its frequency (pitch), its duration of exposure, and/or its recurrence. Environmental noise is measured in decibels (dB). The A-weighted decibel scale (dBA) is used to approximate the range of sensitivity of the human ear to sounds of different frequencies. A noise level is a measure of noise at a given instance in time. A change in level of at least 5 dBA is noticeable to most people, and a 10-dBA increase is judged by most people as a doubling of the sound level. Typical noise sources and noise environments for common indoor and outdoor activities are listed in Table D.12-1.

Table D.12-1. Typical Noise Sources and Noise Environments

Common Outdoor Activities	Noise Levels (dBA)	Common Indoor Activities
Jet Fly-over at 1,000 feet	110-120	Rock Band
Gas Lawn Mower at 3 feet	90-100	N/A
Diesel Truck at 50 feet, at 50 mph	80-90	Food Blender at 3 feet
Commercial Area, Gas Lawn Mover at 100 feet	70	Vacuum Cleaner at 10 feet
Heavy Traffic at 300 feet	60	Normal Speech at 3 feet
Quiet Urban Area (daytime)	40-50	Large Business Office
Quiet Urban Area/Suburban Nighttime	30-50	Theater, large Conference Room (background)
Quiet Rural Nighttime	20-30	Library, Bedroom at Night, Concert Hall (background)
N/A	20-10	Broadcast/Recording Studio

Source: Caltrans 2009.
mph = miles per hour
N/A = not available

The decibel scale is based on logarithms, and two noise sources do not combine in a simple additive fashion; rather, they combine logarithmically. For example, if two identical noise sources produced noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Exposure and Community Noise

Community noise is primarily the product of many distant noise sources, which change gradually throughout a typical day. During the nighttime, exterior background noises are generally lower than the daytime levels. Most household noise also decreases at night and exterior noise becomes more noticeable. Further, most people sleep at night and are more sensitive to noise intrusion during evening and nighttime hours. To account for human sensitivity to noise levels at differing times of day, the Community Noise Equivalent Level (CNEL) was developed. CNEL is a noise index that accounts for the greater annoyance of noise during the evening and nighttime hours. CNEL values are calculated by averaging hourly Leq (equivalent continuous noise level) sound levels for a 24-hour period, and apply a weighting factor to evening and nighttime Leq values.

To account for the fluctuation in noise levels over time, noise impacts are commonly evaluated using time-averaged noise levels. The weighting factor, which reflects increased sensitivity to noise during evening and nighttime hours, is added to each hourly Leq sound level before the 24-hour CNEL is calculated. For the purposes of assessing noise, the 24-hour day is divided into three time periods with the following weighting:

- Daytime: 7 a.m. to 7 p.m., weighting factor of 0 dB
- Evening: 7 p.m. to 10 p.m., weighting factor of 5 dB
- Nighttime: 10 p.m. to 7 a.m., weighting factor of 10 dB

Effect of Noise

People experience a wide range of sounds in the environment. Excessive noise can be not only undesirable, but may also cause physical and/or psychological damage. The amount of annoyance or damage caused by noise is dependent primarily upon the amount and nature of the noise, the amount of ambient noise present before the intruding noise, and the activity of the person working or living in the area. Environmental and community noise levels rarely are of sufficient intensity to cause irreversible hearing damage, but disruptive environmental noise can interfere with speech and other communication and be a major source of annoyance by disturbing sleep, rest, and relaxation.

Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, the higher noise levels nevertheless are considered to be adverse to public health. The surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments tend to be about 7 dB lower than the corresponding daytime levels. In rural areas away from roads and other human activity, the day-to-night difference can be considerably less. Areas with full-time human occupation that are subject to nighttime noise are often considered objectionable because of the likelihood of disrupting sleep. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (USEPA 1974).

In some cases, noise can also disrupt the normal behavior of wildlife. Although the severity of the effects varies depending on the species being studied and other conditions, research has found that wildlife can suffer adverse physiological and behavioral changes from intrusive sounds and other human disturbances (National Park Service [NPS] 2009).

Noise Attenuation

Sound level naturally decreases as one moves farther away from the source. The ground surface (reflective or absorptive) is also a factor in the sound levels. Point sources of noise, such as stationary mobile equipment or on-site construction equipment, attenuate (lessen) at a rate of 6.0 dBA per doubling of distance from the source when in an area with a reflective ground surface (e.g., parking lots). In areas where the ground is absorptive (e.g., soft dirt, grass, or scattered bushes and trees), noise attenuation from a point source is 7.5 dBA for each doubling of distance due to ground absorption (Caltrans 1998).

Widely distributed noises, such as a street with moving vehicles (a "line" source), typically would attenuate at a lower rate of approximately 3.0 dBA for each doubling of distance between the source and the receiver. If the ground surface between source and receiver is absorptive, the excess ground attenuation rate would be 4.5 dBA for each doubling of distance (Caltrans 1998).

Noise from large construction sites would have characteristics of both "point" and "line" sources, so attenuation would generally range between 4.5 and 7.5 dBA per doubling of distance. Noise attenuation rates for both line and point sources of noise may also be influenced by atmospheric effects, such as wind and temperature gradients. Trees and vegetation, buildings, and barriers reduce the noise level that would otherwise occur at a given receptor distance.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as a maximum instantaneous peak of the vibration signal and is typically expressed in units of inches per second (in/sec). The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

D.12.2 Applicable Statutes, Regulations, Plans, and Standards

Regulating environmental noise is generally the responsibility of local governments. The USEPA, however, has published guidelines on recommended maximum noise levels to protect public health and welfare.

Federal

Occupational Safety and Health Act

The Occupational Safety and Health Act of 1970 (OSHA) set on-site occupational noise exposure levels, which are regulated in California via the Cal/OSHA. The maximum time-weighted average noise exposure level of workers is 90 dBA over an eight-hour work shift (29 CFR Part 1910.95).

California Desert Conservation Area Plan, 1980 as Amended

The CDCA Plan (BLM 1980) contains provisions for public land-use management in the California Desert District under the BLM's jurisdiction. Since its first date of publication in 1980, the CDCA Plan has been amended in order to incorporate public concerns and congressional mandates in regard to the use of desert resources, such as the provisions of the 1994 California Desert Protection Act.

In particular, noise-related guidelines established in the CDCA Plan include long-term monitoring of effects of vehicle noise on wildlife (Chapter 3, Wildlife Element) and implementation of land use compatibility standards with limited (vehicle use) areas in order to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses

of the same or neighboring public lands (Chapter 3, Motorized-Vehicle Access Element). The CDCA Plan also identifies energy and utility corridors and power plant sites within the California Desert District (Chapter 3, Energy Production and Utility Corridors Element).

State

California Occupational Safety and Health Administration

The California Department of Industrial Relations, Division of Occupational Safety and Health, enforces Cal/OSHA regulations, which are the same as the Federal OSHA regulations described above. The regulations are contained in Title 8 of the CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, Section 5095.

California Vehicle Code

The California Vehicle Code, Sections 23130 and 23130.5, limits highway vehicle noise and is enforced by the California Highway Patrol and the County Sheriff's Office.

California State Planning Law

The State of California requires local jurisdictions (via California Government Code Section 65302(f)) to develop general plans that include "Noise Elements." A key component of determining land use compatibility is defining appropriate noise thresholds and where such standards apply. "Noise-sensitive" land use classifications in the state of California include residential areas, schools, convalescent and acute care hospitals, parks and recreational areas, and churches. For exterior living areas, such as yards and patios, the noise threshold guideline for new residential land uses is 55 dBA CNEL and must not exceed 65 dBA CNEL.

Local

Riverside County General Plan

The Riverside County General Plan's (Riverside County 2015a) Noise Element includes noise compatibility guidance. The Land Use Compatibility for Community Noise Exposure, included in the noise element, indicates that residential low density, single family, duplex, and mobile homes are normally acceptable up to 60 dBA day-night average sound level (Ldn) or CNEL.

Riverside County's Ordinance No. 847 addresses noise. Ordinance No. 847 states: "This ordinance is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are hereby established." Accordingly, noise in excess of the standards set in Ordinance 847 does not necessarily create a significant impact. Section 4 of Ordinance 847, lists maximum nighttime and daytime sound levels for occupied property by General Plan land use designation. The most restrictive limit would apply to the nearest occupied receptors, which are classified as Rural Residential. The ordinance indicates the maximum decibel level allowed in Rural Residential is a daytime and nighttime limit of 45 dBA Lmax (maximum sound level) when measured at the exterior of an occupied property, except:

- Private construction projects located one-quarter of a mile or more from an inhabited dwelling; or

- private construction projects located within one-quarter of a mile from an inhabited dwelling, provided that: 1) Construction does not occur between the hours of 6 p.m. and 6 a.m. during the months of June through September; and 2) Construction does not occur between the hours of 6 p.m. and 7 a.m. during the months of October through May (Riverside County 2007).

The Riverside County General Plan (Riverside County 2015a) includes policies that address noise within the County boundaries. The policies that would be applicable to the proposed Project are included below.

Noise Element (N)

Policy N 1.4. Determine if existing land uses will present noise compatibility issues with proposed projects by undertaking site surveys.

Policy N 1.5. Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

Policy N 3.3. Ensure compatibility between industrial development and adjacent land uses. To achieve compatibility, industrial development projects may be required to include noise mitigation measures to avoid or minimize project impacts on adjacent uses.

Policy N 7.4. Check each development proposal to determine if it is located within an airport noise impact area as depicted in the applicable Area Plan's Policy Area section regarding Airport Influence Areas. Development proposals within a noise impact area shall comply with applicable airport land use noise compatibility criteria.

Policy N 12.1. Minimize the impacts of construction noise on adjacent uses within acceptable practices.

Policy N 12.2. Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas.

Land Use Element (LU)

Policy LU 29.6. Require that commercial projects abutting residential properties protect the residential use from the impacts of noise, light, fumes, odors, vehicular traffic, parking, and operational hazards.

Riverside County Airport Land Use Compatibility Plan

Noise policies related to the Riverside County ALUC's New Compatibility Plan (RCALUCP 2004) are provided below.

Policy 3.1.4. *Nonresidential Development:* The compatibility of nonresidential development shall be assessed primarily with respect to its usage intensity (the number of people per acre) and the noise-sensitivity of the use. Additional criteria listed in Table 2A shall also apply.

a) The total number of people permitted on a project site at any time, except for rare special events, must not exceed the indicated usage intensity times the gross acreage of the site.

    1) Usage intensity calculations shall include all people (e.g., employees, customers/ visitors, etc.) who may be on the property at any single point in time, whether indoors or outside.

2) Rare special events are ones (such as an air show at an airport) for which a facility is not designed and normally not used and for which extra safety precautions can be taken as appropriate.

b) No single acre of a project site shall exceed the number of people per acre indicated in Policy 4.2.5(b) and listed in Table 2A unless special risk reduction building design measures are taken as described in Policy 4.2.6.

c) The noise exposure limitations cited in Policy 4.1.4 and listed in Table 2B shall be the basis for assessing the acceptability of proposed nonresidential land uses relative to noise impacts. The ability of buildings to satisfy the interior noise level criteria noted in Policy 4.1.6 shall also be considered.

Policy 3.1.6. *Other Development Conditions:* All types of proposed development shall be required to meet the additional conditions listed in Table 2A for the respective compatibility zone where the development is to be located. Among these conditions are the following:

a) Avigation Easement Dedication: See Policy 4.3.5.

b) Deed Notice: See Policy 4.4.3.

c) Real Estate Disclosure: See Policy 4.4.2.

d) Noise Level Reduction: See Policy 4.1.6.

e) Airspace Review: See Policy 4.3.3.

Policy 4.1.1. *Policy Objective:* The purpose of noise compatibility policies is to avoid establishment of noise-sensitive land uses in the portions of airport environs that are exposed to significant levels of aircraft noise.

Policy 4.1.5. *Noise Exposure for Other Land Uses:* Noise level compatibility standards for other types of land uses shall be applied in the same manner as the above residential noise level criteria. The extent of outdoor activity associated with a particular land use is an important factor to be considered in evaluating its compatibility with airport noise. Examples of acceptable noise levels for other land uses in an airport's vicinity are presented in Table 2B.

Policy 4.1.6. *Interior Noise Levels:* Land uses for which interior activities may be easily disrupted by noise shall be required to comply with the following interior noise level criteria.

a) The maximum, aircraft-related, interior noise level that shall be considered acceptable for land uses near airports is 45 dB CNEL in:

- Any habitable room of single- or multi-family residences;
- Hotels and motels;
- Hospitals and nursing homes;
- Churches, meeting halls, theaters, and mortuaries;
- Office buildings; and
- Schools, libraries, and museums.

b) The noise contours depicted in Chapter 3 of this Plan shall be used in calculating compliance with these criteria. The calculations should assume that windows are closed.

c) When reviewed as part of a general plan or zoning ordinance amendment or as a major land use action, evidence that proposed structures will be designed to comply with the above criteria shall be submitted to the ALUC under the following circumstances:

Any mobile home situated within an airport's 55-dB CNEL contour. [A typical mobile home has an average exterior-to-interior noise level reduction (NLR) of approximately 15 dB with windows closed.]

D.13 PALEONTOLOGICAL RESOURCES

D.13.1 Regional and Background Information

Geologic Setting

Geology

A surficial geologic map of the Project area is presented in Figure 3.7-1. As presented in Table D.13-1, there are differences in terminology between the maps presented in the Applicant's Preliminary Geotechnical Report (URS 2011, provided in Appendix S) and in the Applicant's Preliminary Paleontological Resources Assessment Technical Report (Reynolds and Lander 2016, provided in Appendix T). The Geotechnical Report is generally based on mapping by Stone (2006), while the Paleontological Report is based on a map complied by Hayhurst and Bedrossian (2010), and modified by Reynolds et al. (2008). Although the maps are very similar, they use different terminology, and there is at least one difference in interpretation of age that has been considered in the evaluation of impacts to paleontological resources. The geologic map presented in Figure 3.7-1 is the one from the Preliminary Geotechnical Report, and the terminology used in this section is derived from that report. However, the descriptions of the geologic units below are also cross-referenced to the terminology used in the map from the Preliminary Paleontological Resources Assessment Technical Report.

Table D.13-1. Correlation of Geologic Units Between Applicant's Preliminary Geotechnical Report and Applicant's Paleontological Resources Assessment Technical Report

Age of Geologic Unit	Name and Abbreviation from Preliminary Geotechnical Report[1]	Name and Abbreviation from Paleontological Resources Assessment Technical Report[2]
Late Holocene	Qw – alluvium of modern washes	Qw – active alluvial wash deposits
Late Pleistocene to late Holocene	Qs – eolian sand	Qe – stabilized/active eolian/dune deposits
Late Holocene	Qa6 – alluvial fan and alluvial valley deposits	Qf-1 – active alluvial fan deposits
Late Pleistocene to Holocene		Qf-2 – stabilized alluvial fan deposits
Middle to late Pleistocene	Qpv – alluvial deposits or Palo Verde Mesa	Qot – old terrace deposits
Pliocene or Pleistocene to Holocene[3]	Qa3 – alluvial fan and valley deposits	Tba – Bullhead Alluvium

Table D.13-1. Correlation of Geologic Units Between Applicant's Preliminary Geotechnical Report and Applicant's Paleontological Resources Assessment Technical Report

Age of Geologic Unit	Name and Abbreviation from Preliminary Geotechnical Report[1]	Name and Abbreviation from Paleontological Resources Assessment Technical Report[2]

1 – Source is Figure 3 of the Preliminary Geotechnical Report (Appendix S). This map is included in the PA/EIS/EIR as Figure 3.7-1.
2 – Source is Figure 2 of the Paleontological Resources Assessment Technical Report (Appendix T).
3 – The two authors disagree on the age and assignment of this unit, which is found at the extreme northern end of the ROW application area. Because this area is not included within any of the Project alternatives, the disparity between the names and age does not affect the impact analysis.

Pliocene, Pleistocene, and Holocene alluvium and dune sand overlays the older bedrock throughout the Project site. The oldest geologic unit within the Project study area is a unit identified as Unit 3, Holocene to Pleistocene alluvial fan and valley deposits, in Hayhurst and Bedrossian (2010) and URS (2011), and as the Pliocene Bullhead Alluvium in Reynolds and Lander (2016). This unit is found at the very northern end of the proposed ROW area. If interpreted as the Bullhead Alluvium, these sediments were deposited between 3 and 4 million year (Ma) ago. This unit is outside of the footprint of any of the Project alternatives, so the question of its correct age and potential for significant paleontological resources is likely to be moot.

The remainder of the Project site is underlain by alluvial and dune sand units of later Quaternary age. The largest portion of the site consists of Pleistocene age alluvial deposits of the ancestral Colorado River, designated Qpv in URS (2011), and Qot in Reynolds and Lander (2016). This unit consists of moderately indurated, poorly graded sand, gravel, boulders, silt, and clay.

The Qot unit is overlain by Holocene age alluvial-fan and alluvial-valley deposits, designated Qa6 in URS (2011), and split into two separate units, Qf1 and Qf2, in Reynolds and Lander (2016). This unit comprises the western and northern portion of the Project site, and is characterized by unconsolidated sand, gravel, silt, and clay derived from the Big Maria and the Mule Mountains. This unit comprises the Upper Terrace of Palo Verde Mesa. It is the oldest terrace surface in the region, and underlies the southeastern two thirds of the Project area at elevations between 400 and 364 feet. Palo Verde Mesa and the Upper Terrace slope to the south to an elevation of about 335 feet near the Rio Mesa Project area.

Aeolian sand, designated Qs in URS (2011) and Qe in Reynolds and Lander (2016) is found in the northwestern portion of the site, along the proposed route of the gen-tie line. This unit is thought to be composed of wind-blown sand derived from Ford Dry Lake to the west in Chuckwalla Valley. The unit is mapped as late Holocene by Hayhurst and Bedrossian (2010). However, Reynolds and Lander (2016) interpret this unit to include stabilized deposits of late Pleistocene age in the shallow subsurface, overlain by active aeolian and sand dune deposits of late Holocene age.

A very localized occurrence of Holocene age alluvium associated with modern washes, designated Qw in both URS (2011) and Reynolds and Lander (2016), has been mapped in the southwestern corner of the site. These deposits are comprised of unconsolidated sand and gravel eroded from nearby mountain ranges.

Paleontological Resources

The Bullhead Alluvium in the Project study area has a moderate potential for containing significant vertebrate fossils. This unit is reported to have produced the fossilized rib of a horse south of Topock, Arizona (Reynolds and Lander 2016).

The paleontological resources of the Pleistocene sedimentary units in the area were studied in association with the proposed Rio Mesa Solar Project site, located 6 miles southeast of the DQSP, in 2012 (Stewart 2012; Stewart et al. 2012). The Qot unit of Hayhurst and Bedrossian (2010) that is present at the DQSP Project site is also present at the Rio Mesa Project area, and vertebrate fossils were recovered from a 12-foot-thick paleosol (preserved soil horizon) at the Rio Mesa Project site (Stewart 2012). Fossils recovered from the "Palo Verde Mesa paleosol" include more than 800 vertebrate specimens representing birds, snakes, lizards, *Gopherus* (Mojave desert tortoise), *Sylvilagus* (cottontail), *Lepus* (jackrabbit), rodents, *Taxidea* (badger), bighorn sheep, *Odocoileus* (deer), *Equus* (horse), and *Mammuthus* (mammoth). These fossil occurrences suggest that similar deposits in the DQSP Project area have a high potential for producing scientifically important vertebrate fossil remains of late Pleistocene age. The level of potential is to be determined during the pre-construction field survey.

If stabilized aeolian and alluvial sand dune deposits of Pleistocene age are present in the shallow subsurface, then they may contain vertebrate fossils from the end of the latest Pleistocene pluvial period, less than 17 thousand years (ky) ago (Reynolds 2004). Vertebrate fossils have been identified in similar stabilized dune fields of Pleistocene age in Colton, on the western side of the Old Dad Mountains, west of Kelso at Flynn, and north of Baker at Silver Lake. The active portion of the dune field may contain reworked Pleistocene fossil remains, similar to those found at the Rio Mesa Project area (Stewart 2012). These fossil occurrences suggest that the older, stabilized dune field in the Project area has a potential for producing scientifically important vertebrate fossil remains of latest Pleistocene age.

The active late Holocene alluvial wash deposits have produced no fossil remains in the region. However, fan deposits have been deposited in the region for more than a million years and, consequently, these deposits might overlie fossils in the shallow subsurface.

Paleontological Resource Classifications

Potential Fossil Yield Classification System

The BLM uses the Potential Fossil Yield Classification (PFYC) system to assess the potential for discovery of significant paleontological resources or the impact of surface disturbing activities to such resources by using a five-class ranking system (BLM 2007):

1. **Class 1 – Very Low.** Geologic units that are not likely to contain recognizable fossil remains. This class usually includes units that are igneous or metamorphic, excluding reworked volcanic ash units; or units that are Precambrian in age or older. Management concern for paleontological resources in Class 1 units is usually negligible or not applicable and assessment or mitigation is usually unnecessary except in very rare or isolated circumstances. The probability for impacting any fossils is negligible and assessment or mitigation of paleontological resources is usually unnecessary.
2. **Class 2 – Low.** Sedimentary geologic units that are not likely to contain vertebrate fossils or scientifically significant nonvertebrate fossils. This class typically includes vertebrate

or significant invertebrate or plant fossils not present or very rare, units that are generally younger than 10,000 years before present, recent aeolian deposits, or sediments that exhibit significant physical and chemical changes (i.e., diagenetic alteration). Management concern for paleontological resources is generally low. Assessment or mitigation is usually unnecessary except in rare or isolated circumstances and the probability for impacting vertebrate fossils or scientifically significant invertebrate or plant fossils is low. Localities containing important resources may exist, but would be rare and would not influence the overall classification. These important localities would be managed on a case-by-case basis.

3. **Class 3 – Moderate or Unknown.** Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence; or sedimentary units of unknown fossil potential. This class includes sedimentary rocks that are marine in origin with sporadic known occurrences of vertebrate fossils or other rocks where vertebrate fossils and scientifically significant invertebrate or plant fossils are known to occur intermittently. The predictability of fossils within these units is known to be low or the units have been poorly studied and/or poorly documented. Potential yield cannot be assigned without ground reconnaissance. This class is subdivided into two groups: Class 3(a) and Class 3(b).

   a) Class 3(a) is assigned to rock units where sufficient information has been developed to know that the unit has widely scattered occurrences of vertebrate fossils and/or scientifically significant invertebrate or plant fossils. Common invertebrate or plant fossils may be found in the area, and opportunities may exist for hobby collecting.

   b) Class 3(b) is assigned to rock units that exhibit geologic features and preservational conditions that suggest significant fossils could be present, but little information about the paleontological resources of the unit or the area is known. This may indicate the unit or area is poorly studied, and the field survey may uncover significant finds. The units in this Class may eventually be placed in another Class when sufficient survey and research is performed.

4. **Class 4 – High.** Geologic units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Surface disturbing activities may adversely affect paleontological resources in many cases. This class is subdivided into two groups, based primarily on the degree of soil cover: Class 4(a) and Class 4(b):

   a) Class 4(a) is assigned to rock units that are exposed with little or no soil or vegetative cover. Outcrop areas are extensive with exposed bedrock areas often larger than two acres. Paleontological resources may be susceptible to adverse impacts from surface disturbing actions and illegal collecting activities may impact some areas.

   b) Class 4(b) is assigned to areas underlain by geologic units with high potential but have lowered risks of human-caused adverse impacts and/or lowered risk of natural degradation due to moderating circumstances. The bedrock unit has high potential, but a protective layer of soil, thin alluvial material, or other conditions may lessen or prevent potential impacts to the bedrock resulting from the activity.

5. **Class 5 – Very High.** Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation. This class is subdivided into Class 5(a) and Class 5(b) in the same manner as Class 4 above.

Society of Vertebrate Paleontology

The County of Riverside uses the Society of Vertebrate Paleontology (SVP) definitions for four categories of paleontological resource potential (potential for rock units: high, low, undetermined, and no potential) (SVP 2010):

High Potential. Rock units from which vertebrate or significant invertebrate fossils or suites of plant fossils have been recovered and are considered to have a high potential for containing significant non-renewable fossiliferous resources. These units include, but are not limited to, sedimentary formations, volcanic formations, and sedimentary rock units. Sensitivity comprises both (a) the potential for yielding significant vertebrate, invertebrate, or botanical fossils, and (b) the importance of recovery evidence for new and significant taxonomic, phylogenetic, ecologic, or stratigraphic data. Areas that contain potentially datable organic remains older than Recent are also classified as significant.

Low Potential. Reports in the paleontological literature or field surveys by a qualified vertebrate paleontologist may allow determination that some areas or units have low potential for yielding significant fossils. Such units will be poorly represented by specimens in institutional collections.

Undetermined Potential. Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potentials.

No Potential. Metamorphic and granitic rock units do not yield fossils and therefore have no potential to yield significant non-renewable fossiliferous resources.

D.13.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

The management and preservation of paleontological resources on public lands are governed under various laws, regulations, and standards. For the past several decades, the BLM has used the FLMPA as the legislative foundation for its paleontological resource management policies. The BLM has also developed general procedural guidelines (Manual H-8720-1; Instructional Memorandum [IM] 2008-009; IM 2009-011) for the management of paleontological resources (BLM 2007). Paleontological resource management objectives include the evaluation, management, protection, and location of fossils on BLM-managed lands. Management policy also includes measures to ensure that proposed land use projects do not inadvertently damage or destroy scientifically significant paleontological resources.

Federal Land Management and Policy Act

FLMPA defines significant fossils as: unique, rare or particularly well-preserved; an unusual assemblage of common fossils; being of high scientific interest; or providing important new data concerning [1] evolutionary trends, [2] development of biological communities, [3] interaction

between or among organisms, [4] unusual or spectacular circumstances in the history of life, [5] or anatomical structure.

Paleontological Resources Preservation Act

The Paleontological Resources Preservation Act (PRPA), Title VI, Subtitle D of the Omnibus Public Lands Act directs the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on Federal land using "scientific principles and expertise." The PRPA incorporates most of the recommendations of the report of the Secretary of the Interior entitled "Assessment of Fossil Management on Federal and Indian Lands" (USDI 2000) in order to formulate a consistent paleontological resources management framework. In passing the PRPA, Congress officially recognized the scientific importance of paleontological resources on some Federal lands by declaring that fossils from these lands are Federal property that must be preserved and protected.

The PRPA codifies existing policies of the BLM, NPS, USFS, Bureau of Reclamation, and USFWS, and provides the following:

1. criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from Federal lands;
2. minimum requirements for paleontological resource-use permit issuance (terms, conditions, and qualifications of applicants);
3. definitions for "paleontological resources" and "casual collecting"; and
4. requirements for curation of Federal fossils in approved repositories.

Federal legislative protections for scientifically significant fossils apply to projects that take place on Federal lands (with certain exceptions such as DOD), involve Federal funding, require a Federal permit, or involve crossing state lines. Because most of the Project site is located on BLM-managed lands, Federal protections for paleontological resources apply under NEPA and FLPMA.

Potential Fossil Yield Classification System

Occurrences of paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them. The probability for finding paleontological resources can be broadly predicted from the geologic units present at or near the surface. Therefore, geologic mapping can be used for assessing the potential for the occurrence of paleontological resources.

The BLM uses the PFYC system, which classifies geologic units based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential. This classification is applied to the geologic formation, member, or other distinguishable unit, preferably at the most detailed mappable level. It is not intended to be applied to specific paleontological localities or small areas within units. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher class; instead, the relative abundance of significant localities is intended to be the major determinant for the class assignment.

National Environmental Policy Act

NEPA (42 USC §4321 et seq.) declares a continuing Federal policy that directs "a systematic, interdisciplinary approach" to planning and decision-making and requires environmental statements for "major Federal actions significantly affecting the quality of the human environment." Implementing regulations by the CEQ (40 CFR Parts 1500-1508) requires Federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environment and avoid or minimize adverse environmental impacts. Federal agencies are further directed to emphasize significant environmental issues in project planning and to integrate impact studies required by other environmental laws and Executive Orders into the NEPA process. The NEPA process should therefore be seen as an overall framework for the environmental evaluation of Federal actions. The BLM is the Lead Agency under NEPA for the Project.

State

Public Resources Code §5097.5

PRC §5097.5 includes additional state-level requirements for the assessment and management of paleontological resources, including the reasonable mitigation of adverse impacts to paleontological resources resulting from development on public lands (lands under state, county, city, or public district or agency ownership or jurisdiction). This regulation defines the removal of paleontological "sites" or "features" from public lands as a misdemeanor, and prohibits the removal of any paleontological "site" or "feature" from public land without permission of the applicable jurisdictional agency. These protections apply only to non-Federal public lands within California, and thus apply only to private land portion of the DQSP.

Public Resources Code §30244

If paleontological resources would be adversely impacted as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

Local

Riverside County General Plan

The Multipurpose Open Space Element of the Riverside County General Plan (Riverside County 2015a) identifies policies intended to minimize impacts to paleontological resources. It also includes a Paleontological Sensitivity Resources map indicating lands with low, undetermined, or high potential for finding paleontological resources. The following policies apply to the portions of the Project site within County- and privately-owned lands (Riverside County 2015a):

OS 19.6. Whenever existing information indicated that a site proposed for development has high paleontological sensitivity as shown on Figure OS-7, a paleontological resource impact mitigation program (PRIMP) shall be filed with the County Geologist. The PRIMP shall specify the steps to be taken to mitigate impacts to paleontological resources.

OS 19.7. Whenever existing information indicates that a site proposed for development has low paleontological sensitivity as shown in Figure OS-7, no direct mitigation is required unless a fossil is encountered during site development. Should a fossil be encountered, the County Geologist shall be notified and a paleontologist shall document the extent and potential

significance of the paleontological resources on the site and establish appropriate mitigation measures for further site development.

OS 19.8. Whenever existing information indicates that a site proposed for development has undetermined paleontological sensitivity as shown on Figure OS-7, a report shall be filed with the County Geologist documenting the extent and potential significance of the paleontological resources on site and identifying mitigation measures for the fossil and for impacts to significant paleontological resources.

D.14 RECREATION AND PUBLIC ACCESS

D.14.1 Regional and Background Information

Wilderness Areas

The Wilderness Act limits allowable types of recreation on wilderness lands to those that are primitive and unconfined, depend on a wilderness setting, and do not degrade the wilderness character of the area. Motorized or mechanized vehicles or equipment are not permitted in wilderness. The BLM regulates such recreation on such lands within its jurisdiction in accordance with the policies, procedures and technologies set forth in 43 CFR Part 6300, BLM Manual 6340 (Management of Designated Wilderness Areas) (BLM 2012d), and BLM's Principles for Wilderness Management in the California Desert (BLM 1995).

Long Term Visitor Areas (LTVAs)

The BLM manages LTVAs, which accommodate visitors who wish to camp for as long as seven consecutive months. Winter visitors who wish to stay in an LTVA must purchase either a long-term permit for $180 that is valid for the entire season or any part of the season (which runs from September 15 through April 15), or a short visit permit for $40 that is valid for 14 consecutive days. Between the dates of April 15 to September 15, there is no trash pick-up and toilets are closed. Permit holders may move from one LTVA to another within the permitted timeframe without incurring additional fees. Activities in and use of LTVAs are regulated by the rules of conduct set forth in 43 CFR subpart 8365 and the 35 supplemental rules that the BLM has determined are necessary to provide for public safety and health and to reduce the potential damage to natural and cultural resources of the public lands (BLM 2015a).

Dispersed camping is allowed on public lands for no more than a period of 14 days in any 30-day period. The 14-day limit may be reached either through a number of separate visits or through 14 days of continuous overnight occupation during the 30-day period; campers must relocated to another site at least 25 miles away for forty-eight hours, before returning.

Public Access

The CDCA Plan and the NECO Plan Amendment to the CDCA Plan state that vehicle access is among the most important recreation issues in the desert. A primary consideration of the recreation program is to ensure that access routes necessary for recreation enjoyment are provided (BLM 2002).

Recreation and motorized travel opportunities are determined, in part, by the CDCA Plan multiple-use class and by OHV area designations. The multiple-use class is based on the

sensitivity of resources and kinds of uses for each geographic area. Each of the four multiple-use classes describes a different type and level or degree of use that is permitted within that particular geographic area (refer to Section 3.10 for a detailed discussion regarding CDCA Plan multiple-use classes).

During the CDCA and NECO planning process, a detailed inventory and designation of routes was developed. This route designation system, along with other land management actions such as setting aside ACECs and the congressional designation of wilderness areas, has resulted in a significant loss of OHV recreation opportunities in eastern Riverside County. Currently, there are no BLM-designated "open" OHV areas in Riverside County.

Under the CDCA Plan, travel routes are classified as Open, Limited, or Closed, with the following definitions:

1) Open Route: Access by motorized vehicles is allowed.
2) Limited Route: Access by motorized vehicles is limited to use by number of vehicles, type of vehicle, time or season, permitted or licensed, or speed limits.
3) Closed Route: Access by motorized vehicles is prohibited except for authorized use.

As required by the CDCA Plan, the NECO Plan Amendment to the CDCA Plan created a detailed inventory of existing routes within the NECO planning area (see Figure 3.14-3). A route has high significance if it provides access to other routes, historical sites, or recreational areas.

Recreation and vehicle use is generally limited to the cooler months of September through May. Use is nearly non-existent during the summer months. Recreational vehicle use consists of touring in passenger cars, SUVs, motorcycles, and ATVs. Some camping may occur in the vicinity of the site, but most use is of short duration and by local residents. More attractive recreation opportunities occur in areas where BLM has provided facilities such as the Midland LTVA, ACECs, or other scenic, natural, or cultural attractions.

D.14.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

The Project would be located primarily on BLM-administered lands. The following is a discussion of the Federal plans and policies that would be applicable to the BLM-administered lands on the Project site.

Federal Land Policy and Management Act, 1976 as Amended

FLPMA establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. In particular, the FLPMA's relevance to the Project is that Title V, §501, establishes BLM's authority to grant ROWs for generation, transmission, and distribution of electrical energy. Under FLPMA, the BLM is responsible for the development of energy resources on BLM-administered lands in a manner that balances diverse resource uses and that takes into account the long-term needs of future generations for renewable and non-renewable resources. Among those uses, FLPMA recognizes that the public lands should be managed in a manner that will provide for outdoor recreation.

California Desert Conservation Area Plan, 1980 as Amended

The CDCA Plan (BLM 1980) includes a Recreation Element to address use of, and access to, recreational destinations within the California Desert. The management goals of the CDCA Plan Recreation Element are as follows:

1) Provide for a wide range of quality recreation opportunities and experiences emphasizing dispersed undeveloped use.
2) Provide a minimum of recreation facilities. Those facilities should emphasize resource protection and visitor safety.
3) Manage recreation use to minimize user conflicts, provide a safe recreation environment, and protect desert resources.
4) Emphasize the use of public information and educational techniques to increase public awareness, enjoyment, and sensitivity to desert resources.
5) Adjust management approach to accommodate changing visitor use patterns and preferences.
6) Encourage the use and enjoyment of desert recreation opportunities by special populations, and provide facilities to meet the needs of those groups.

In order to accommodate the goals, access to the desert must be provided while protecting sensitive resources. The Recreation Element states the following with regard to access:

"To engage in most desert recreational activities outside of open areas, visitors must use motorized vehicles and usually travel on some previously used or marked motorized-vehicle route. Understandably, vehicle access is among the most important recreation issues in the Desert. A primary consideration of the recreation program, therefore, is to ensure that access routes necessary for recreation enjoyment are provided" (BLM 1980, p. 84).

Northern and Eastern Colorado Desert Coordinated Management Plan

The NECO Plan (BLM 2002), as amended to the CDCA Plan, provides for management of recreation within the California Desert area of El Centro, Blythe, Needles, and cities in the Coachella Valley, including the Project study area. The NECO Plan Amendment to the CDCA Plan specifies the type of recreational activities allowed in Multiple-Use Classes on BLM-administered land. Under this plan, new routes may be allowed if approved by the authorized officer through the appropriate public process.

State

There are no state regulations that are applicable to recreational resources within the vicinity of the Project site.

Local

Riverside County General Plan

Private lands around the Project area, including the inholding within the Project area, are designated as Agriculture (AG) and Open Space Rural (OS-RUR) according to the Riverside County General Plan Land Use Map (Riverside County 2015a). Both designations allow for

residential development at low density. Agricultural areas may be used for recreational activities, such as hunting or walking. No specific policies relating to recreation apply to the proposed Project.

D.15 SOCIAL AND ECONOMIC SETTING

D.15.1 Regional and Background Information

There is no regional or background information relevant to socioeconomic impacts. Socioeconomic conditions specific to the Project area are described in Section 3.15.

D.15.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

National Environmental Policy Act

Under NEPA (42 USC §4321 et seq.), an EIS must include an analysis of the proposed action's economic, social, and demographic effects related to effects on the natural or physical environment in the affected area, but does not allow for economic, social, and demographic effects to be analyzed in isolation from the physical environment.

The President's CEQ developed guidelines and procedures to assist Federal agencies with NEPA procedures so that environmental justice concerns are effectively identified and addressed. This includes guidelines for public participation, alternatives, and mitigation.

State

Title 14 California Code of Regulations § 15131

The regulations implementing CEQA state that economic or social factors of a project may be included in a CEQA document but shall not be treated as significant effects on the environment. However, economic or social effects of a project may be used to determine the significance of physical changes caused by the Project. Additionally, economic, social, and housing factors should be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce or avoid the significant effects on the environment.

Local

There are no applicable local social or economic statutes, regulations, plans, or standards that apply to the Proposed Action.

D.16 SPECIAL DESIGNATIONS AND LANDS WITH WILDERNESS CHARACTERISTICS

D.16.1 Regional and Background Information

BLM's National Landscape Conservation System (NLCS) designations include: National Monuments, National Conservation Areas, Wilderness Areas, Wilderness Study Areas, National Scenic and Historic Trails, Wild and Scenic Rivers, Outstanding Natural Areas, Forest Reserves, or any other special designations lands described in the Omnibus Public Lands Management Act of 2009 (PL 111-11 §2002(b)). Other BLM special designations include Areas of Critical Environmental Concern (ACECs), Cooperative Management and Protection Areas, Scenic and Back Country Byways, watchable wildlife viewing sites, wild horse and burro ranges, and other special designations identified in BLM Handbook H-1601 – Land Use Planning Handbook, Chapter III (BLM 2005).

Land use plan and management direction for such designations must comply with the purposes and objectives of the proclamation or act of Congress regardless of any conflicts with the FLPMA's multiple-use mandate (BLM 2009).

Regional Setting

The Project would be located within the Palo Verde Mesa of the Sonoran Desert region of southeastern California, an alluvial-filled basin that is bounded by the Mojave Desert to the north and by the McCoy Mountains, Little Maria Mountains, and Big Maria Mountains to the west, northwest, and northeast, respectively, extending southwest to the Palo Verde Mountains. The Palo Verde Mesa is bounded by the Palo Verde Valley to the east, which is generally formed by the flood plain deposits of the Colorado River.

Wilderness Characteristics Review

Pursuant to §201(a) of the FLPMA, the BLM is required to maintain an inventory of all public lands and their resource and other values, which includes wilderness characteristics. All Public Lands within the California Desert District were analyzed in the 1979 wilderness inventory process to determine whether they possessed appropriate wilderness characteristics of size, naturalness, outstanding opportunities for solitude or primitive and unconfined type of recreation and other supplemental values.

Designated Wilderness Areas

Wilderness areas are congressionally designated and are managed pursuant to the Wilderness Act of 1964 (PL 88-577; 16 USC 1131-1136), and/or the specific legislation designating the wilderness area. In addition to the Wilderness Act of 1964, wilderness areas in the CDCA were designated and are managed through the CDPA of 1994 (PL 103-433) and the Omnibus Public Lands Management Act of 2009 (PL 111-11). A designated wilderness area is defined as having four primary characteristics, including the following:

1. Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;

2. Has outstanding opportunities for solitude or a primitive and unconfined type of recreation;
3. Has at least 5,000 acres of land or is of sufficient size to make practicable its preservation and use in an unimpaired condition; and
4. May also contain ecological, geological or other features of scientific, educational, scenic, or historical value.

Six of the seven wilderness areas located in the vicinity of the Project site and were designated by Congress through enactment of the CDPA (16 USC §§ 410aaa et seq.) and formally incorporated in the CDCA Plan through the NECO Plan Amendment to the CDCA Plan (BLM 2002a). The Trigo Mountain Wilderness was designated under the Arizona Desert Wilderness Act of 1990.

According to the CDPA §103(d), "The Congress does not intend for the designation of wilderness areas in §102 of this title to lead to the creation of protective perimeters or buffer zones around any such wilderness area. The fact that non-wilderness activities or uses can be seen or heard from areas within a wilderness area shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area," (Govtrack.us 2015).

Users of these wilderness areas are seeking opportunities to experience naturalness, solitude, and unconfined recreation. The areas have no developments other than sparse trails and any routes that have not been reclaimed since the wilderness designation. Little data exist on the amounts, types, and trends of visitor use experiences such as camping, hiking, or sightseeing. Recreation uses are discussed in Section 3.14, *Recreation and Public Access,* and include hunting, fishing, and non-commercial trapping. Pets are allowed, and the use of horses is permitted. Camping is permitted, but is limited to a period of 14 days. After 14 days, campers must relocate at least 25 miles from the previous site (BLM 2014a-g).

Areas of Critical Environmental Concern

ACECs are BLM-specific, administratively designated areas within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes; or to protect life and safety from natural hazards (FLPMA, 43 USC 1702(a); 43 CFR 1601.0-5(a)). By itself, the designation does not automatically prohibit or restrict uses in the area; instead, it provides a record of significant values that must be accommodated when BLM considers future management actions and land use proposals.

D.16.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

The following summarizes the Federal statutes, regulations, plans and standards that would be applicable to the special designations on BLM-administered lands on and in the vicinity of the Project.

Federal Land Policy and Management Act, 1976 as Amended

FLPMA (Public Law 94-579, October 21, 1976), is called the BLM Organic Act because it consolidates and articulates BLM's management responsibilities. Many land and resource management authorities were established, amended, or repealed by FLPMA, and it proclaimed multiple use, sustained yield, and environmental protection as the guiding principles for public land management (BLM 2015).

Several sections of FLPMA provide guidance regarding the establishment, management, and inventory of resource values that are considered for special designations.

Lands in the vicinity of the Project were recently reviewed for wilderness characteristics based on FLPMA §201(a) requiring the BLM to:

> *prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values), giving priority to areas of critical environmental concern. This inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values. The preparation and maintenance of such inventory or the identification of such areas shall not, of itself, change or prevent change of the management or use of public lands.*

Section 202(c)(3) requires the BLM, through the land use planning system, to "give priority to the designation and protection of areas of critical environmental concern." In §103(a), an ACEC is defined as the following:

> *An area within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.*

Section 603(a) of FLPMA required BLM to conduct the original inventory of wilderness characteristics, which was completed in 1979, while §603(c) stated that "once an area has been designated for preservation as wilderness, the provisions of the Wilderness Act (16 USC 1131 et seq.) which apply to national forest wilderness areas shall apply with respect to the administration and use of such designated area".

Wilderness Act of 1964

The "Wilderness Act" (Public Law 88-577; September 3, 1964) is the legislation authorizing the establishment and management of the seven wilderness areas in the vicinity of Project Area. Section 4(a) states:

> *……each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character. Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use.*

California Desert Protection Act of 1994

The CDPA (Public Law 103-433, October 31, 1994) designated 69 areas as components of the National Wilderness Preservation System on BLM-managed public lands in the California Desert. Section 103(d) states that "wilderness is a distinguishing characteristic of the public lands in the California desert" and "the wilderness values of desert lands are increasing threatened by …development." The CDPA further states that there are no buffer zones designated along with the wilderness areas: "The fact that non-wilderness activities or uses can be seen or heard from areas within a wilderness area shall not, in itself, preclude such activities or uses up to the boundary of a wilderness area."

Omnibus Public Lands Management Act of 2009

The Bureau of Land Management's National Landscape Conservation System (NLCS) was created in June 2000 to conserve, protect, and restore special areas and unique resources. The lands are prized for their cultural, ecological, scientific, educational, wildlife, and aesthetic values for the benefit of current and future generations. The NLCS system gained legal permanence in 2009 with the passage of the Omnibus Public Land Management Act (Public Law 111-11, March 30, 2009) §2002(a). Section 2002(c) directed the BLM "to manage the system in accordance with any applicable law (including regulations) relating to any of component of the system in a manner that protects the values for which the components of the system were designated." The Public Lands within the CDCA and components of the National Wilderness Preservation System are areas included under this authorization.

California Desert Conservation Area Plan, 1980 as Amended

The CDCA is a 25-million acre expanse of land designated by Congress in 1976 through §601 of FLPMA. The BLM administers about 10 million of those acres. When Congress created the CDCA, it recognized its special values, and the need for a comprehensive plan for managing the area.

The CDCA Plan recognized the need to maintain and perpetuate wilderness resources, including plants and animals indigenous to the area, and to the extent consistent provide the above for opportunities for public use, enjoyment, and understanding, and the unique experiences dependent upon a wilderness setting, including maintaining access to these areas. The plan also directed managers to consider valid nonconforming uses and activities in the management of the wilderness so as to have the least possible adverse effect and/or wherever possible a positive effect (BLM 1980).

In addition, the plan established ACECs as a management tool for the protection of special values, including cultural resources, prehistoric archaeological features, wildlife habitat, and sensitive plant species. Prior to its designation, management prescriptions are developed for each proposed ACEC. These prescriptions are site specific and include actions that the BLM has the authority to carry out, as well as recommendations for actions that the BLM does not have direct authority to implement, such as cooperative agreements with other agencies and mineral withdrawals (BLM 1980).

Additional discussion regarding management prescriptions of specific ACECs are found in the relevant sections: 3.3, *Biological Resources – Vegetation*; 3.4, *Biological Resources – Wildlife*; and 3.5, *Cultural Resources*.

Northern and Eastern Colorado Desert Coordinated Management Plan

The NECO Plan Amendment to the CDCA Plan is a landscape-scale, multi-agency planning effort that protects and conserves natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem. The planning area encompasses over 5 million acres and hosts 60 sensitive plant and animal species. Lands within the planning area are also popular for hiking, hunting, rockhounding, and driving for pleasure. Several commercial mining operations, livestock grazing, and utility transmission lines exist in the area as well (BLM 2002a).

The record of decision for the NECO Plan Amendment to the CDCA Plan, signed December 12, 2002, amended the 1980 CDCA Plan by formally incorporating the 23 wilderness areas (including the seven in the vicinity) established by the 1994 CDPA in the CDCA (BLM 2002b).

BLM Manual 6340, Management of Designated Wilderness Areas

This manual section identifies BLM's role in administering wilderness areas on public lands, provides policy guidance for BLM personnel, and sets the framework for wilderness management program development. It states the goals of wilderness management, as well as administrative functions and specific activities related to wilderness management (BLM 2012d).

BLM Handbook 1601-1 Land Use Planning Handbook

This handbook provides general guidance for the establishment of BLM administrative designations including those in the vicinity of the Project: ACECs and Back Country Byways. It specifically states that designated ACECs must be managed to protect the area and prevent irreparable damage or natural systems (BLM 2005).

BLM Handbook 8357-1, 1993 BLM Byways Handbook

This handbook provides specific direction for BLM's Back Country Byways program, including information of Byways nomination and designation, planning criteria, visitor safety, and specifications for entrance kiosks (BLM 1993).

BLM Instruction Memorandum No. 2011-154

This Instruction Memorandum directs offices to continue to conduct and maintain inventories regarding the presence or absence of wilderness characteristics, and to consider lands with wilderness characteristics in land use plans and when analyzing projects under NEPA (BLM 2011).

State

Special designations refer specifically to the BLM and are not relevant to the state government.

D.17 TRANSPORTATION AND TRAFFIC

D.17.1 Regional and Background Information

The level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS indicators for the highway and roadway system are based on specific characteristics of traffic flow on designated

sections of roadway during a typical day. For mainline freeway and roadway segments, these include overall traffic volume, speed, and density.

Several physical and operational characteristics of the roadway, such as lane configuration and flow speed (i.e., the typical speed along a roadway segment) are used to determine the vehicular capacity of the roadway segment. When these two sets of data are compared, a volume-to-capacity ratio is calculated. These factors then are converted to a letter grade identifying operating conditions and expressed as LOS A through F. The *Highway Capacity Manual 2000*, published by the Transportation Research Board, includes six levels of service for roadways or intersections ranging from LOS A (best operating conditions characterized by free-flow traffic, low volumes, and little or no restrictions on maneuverability) to LOS F (worst operating conditions characterized by forced traffic flow with high traffic densities, slow travel speeds, and often stop-and-go conditions) (Transportation Research Board 2000).

Intersections

Table D.17-1 shows the relationship between LOS and the performance measures for signalized and unsignalized intersections, and lists the *Highway Capacity Manual 2000* delay criteria for signalized intersections.

Table D.17-1. Intersection Level of Service Definitions

Level of Service	Signalized Intersection Control Delay (in seconds/vehicle)	Unsignalized Intersection Control Delay (in seconds/vehicle)
A	0 – 10	0 – 10
B	10.1 – 20	10.1 – 15
C	20.1 – 35	15.1 – 25
D	35.1 – 55	25.1 – 35
E	55.1 – 80	35.1 – 50
F	80.1 or more	50.1 or more

Source: National Research Council 2000, Exhibits 16.2 and 17-2.

Public Transportation within the Vicinity of the Project

Public transportation within the vicinity of the Project consists of an airport, rail and bus services, and pedestrian facilities. Information about these forms of public transportation is provided below.

Airport Service

The nearest airport facility to the Project site is the Blythe Airport. Blythe Airport is a public facility located approximately 6 miles west of the City of Blythe and approximately 1.5 miles northeast of the Project site. The airfield has been open since 1940, when it was known as Bishop Army Airfield. The airport later became a part of Muroc Army Air Field, now known as Edwards Air Force Base.

Blythe Airport has two operating runways. Runway 8-26 (oriented east-west), the primary runway, is 6,543 feet long and 150 feet wide. Runway 17-35 (oriented north-south) is 5,800 feet

long and 100 feet wide (AirNav.com 2015). Today, Blythe Airport is primarily used for general aviation (i.e., flights other than military and regularly-scheduled airline service and regular cargo flights).

Bus and Rail Service

Bus service is offered by the Palo Verde Valley Transit Agency (PVVTA) along SR-78 (Neighbours Boulevard) north and south of I-10. Bus route 3 runs along SR-78 (Neighbours Boulevard) south of I-10 towards Town of Ripley; this is the closest bus route to the Project site (Palo Verde Valley Transit Agency 2016).

There is no passenger rail service to Blythe.

Bicycle and Pedestrian Facilities

Bicycle facilities are generally classified as Class I (bicycle paths separated from roads), Class II (striped bicycle lanes within the paved areas of roadways), or Class III (signed bike routes that allow cyclists to share streets with vehicles). There are no bicycle facilities on or adjacent to the Project site (Riverside County 2010).

Pedestrian facilities include sidewalks, crosswalks, curb ramps, pedestrian signals, and streetscape amenities. The local roadways described above do not include any pedestrian facilities.

D.17.2 Applicable Statutes, Regulations, Plans, and Standards

Construction, operation, maintenance, and decommissioning of the Project could affect access and traffic flow patterns on public streets and highways. The following sections provide the Federal, state and local transportation and traffic laws, regulations, and policies pertinent to the Project.

Federal

The Code of Federal Regulations provides guidelines for regulations as they relate to the movement of hazardous materials via the Federal Motor Carrier Safety Administration. Federal Aviation Administration (FAA) guidelines and regulations are provided for aviation activities during the construction and post-construction periods.

State

The California Vehicle Code (CVC) and the California Streets and Highway Code outline regulations pertaining to the transportation of hazardous waste within the state. The following laws and regulations would be potentially applicable to the Project.

CVC, Div 2, Chapter 2.5; Div 6; Chap. 7; Div 13; Chap. 5; Div. 14.1; Chap 1 & 2; Div. 14.8; Div. 15

These regulations pertain to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.

California Streets and Highway Code, Div 1, Chap 3; Div 2 Chap 5.5

These regulations cover the care and protection of state and county highways and provisions for the issuance of written permits.

CVC Section 353

This regulation defines hazardous materials.

CVC Sections 2500-2505

This regulation authorizes the issuance of licenses for the transport of hazardous materials.

CVC Sections 13369, 15275 and 15278

These regulations address the licensing of drivers and the classification of licenses required for the operation of particular types of vehicles. The regulations also require certificates permitting operation of vehicles transporting hazardous materials.

CVC Sections 31303-31309

These regulations address the highway transport of hazardous materials, the routes used, and restrictions on those facilities.

CVC Sections 31600-31620

These regulations control the transportation of explosive materials.

CVC Sections 32000-32053

These regulations standardize the licensing of carriers of hazardous materials, including noticing requirements.

CVC Section 32100-32109

These regulations establish special requirements for the transportation of inhalation hazards and poisonous gases.

CVC Sections 34000-34121

These regulations establish special requirements for the transportation of flammable and combustible liquids over public roads and highways.

CVC Section 34500 et seq.

These regulations address the safe operation of vehicles, including those that are used for the transportation of hazardous materials.

CVC Sections 35780

These regulations require permits for any load exceeding California Department of Transportation (Caltrans) weight, length, or width standards for public roadways.

California Streets and Highway Code, Div 1, Chap 3; Div 2 Chap 5.5

These regulations cover the care and protection of state and county highways and provisions for the issuance of written permits.

California Health and Safety Code Section 25160 et seq.

These regulations require that an authorized representative of the generator or facility operator that is responsible for loading hazardous waste into a transport vehicle shall, prior to loading, ensure that the driver of the transport vehicle is in possession of the appropriate class of driver's license and any endorsements required to operate the transport vehicle with the intended load.

California Streets and Highways Code Sections 117, 660-695, and 700-711

These regulations govern right-of-way (ROW) encroachment and the granting of permits for encroachments on state highways and freeways.

California Streets and Highways Code Sections 1450, 1460 et seq., and 1480 et seq.

These regulations govern ROW encroachment and the granting of permits for encroachments on county roads.

California Government Code Sections 65352, 65940, and 65944

These regulations require evaluation of compatibility with military activities for any land use proposal located near a military installation or airspace.

Caltrans Encroachment Permit

The use of state highways for purposes other than transportation purposes requires an encroachment permit, which an applicant can obtain through submission of Caltrans form TR-0100. This permit is required for utilities, developers, and non-profit organizations for use of the state highway system to conduct activities other than transportation (e.g., landscape work, utility installation, film production) within the ROW. The application would be forwarded to Caltrans District 8, whose jurisdiction includes the DQSP site. Part 5 of the Caltrans Traffic Manual provides Traffic Control Devices for Low-Volume Roads (Caltrans 2014). Additionally, the transport of oversize or overweight loads would require approval from Caltrans.

Caltrans Traffic Impact Study

Caltrans reviews Federal, state, and local agency development projects and land use change proposals for their potential impact to state highway facilities. The applicability and scope of a traffic impact study are presented in the Caltrans Guide for the Preparation of Traffic Impact Studies (Caltrans 2002).

Local

2011 Riverside County Congestion Management Program

Riverside County's Congestion Management Plan specifies that all Congestion Management Plan roadways operate at a Level of Service (LOS) of "E" or better. All state highways and principal arterials are Congestion Management Plan roadways. I-10 and SR-78 are the only Congestion Management Plan roadways in the Project study area (RCTC 2011). The Congestion Management Plan was first established in 1990 under Proposition 111.

Proposition 111 established a process for each metropolitan county in California to designate a Congestion Management Agency that would be responsible for development and implementation of the Congestion Management Plan within county boundaries. The Riverside County Transportation Commission (RCTC) was designated as the Congestion Management Agency in

1990 and, therefore, prepares the Congestion Management Plan updates in consultation with the Technical Advisory Committee, which consists of local agencies, the County of Riverside, transit agencies, and subregional agencies.

The RCTC's adopted minimum LOS threshold is LOS "E." Therefore, when a Congestion Management Plan street or highway segment falls to "F," a deficiency plan would be required. Preparation of a deficiency plan would be the responsibility of the local agency where the deficiency is located. Other agencies identified as contributors to the deficiency would also be required to coordinate with the development of the plan. The plan must contain mitigation measures, including consideration of Transportation Demand Management strategies and transit alternatives, and a schedule for mitigating the deficiency.

Regional Comprehensive Plan and Regional Transportation Plan

The Southern California Association of Government's (SCAG's) Intergovernmental Review section, part of the Environmental Planning Division of Planning and Policy, is responsible for performing consistency review of regionally significant local plans, projects, and programs. Regionally significant projects are required to be consistent with SCAG's adopted regional plans and policies, such as the Regional Comprehensive Plan and the Regional Transportation Plan. The criteria for projects of regional significance are outlined in state CEQA Guidelines Sections 15125 and 15206. According to the SCAG Intergovernmental Review Procedures Handbook, "new or expanded electrical generating facilities and transmission lines" qualify as regionally significant projects.

Policy 3.05: *Encourage patterns of urban development and land use which reduce costs on infrastructure construction and make better use of existing facilities.*

Policy 3.14: *Support local plans to increase density of future development located at strategic points along the regional commuter rail, transit systems, and activity centers.*

Policy 3.16: *Encourage developments in and around activity centers, transportation corridors, underutilized infrastructure systems, and areas needing recycling and redevelopment.*

Policy 3.17: *Support and encourage settlement patterns which contain a range of urban densities.*

Policy 3.18: *Encourage planned development in locations least likely to cause adverse environmental impact.*

Policy RTP G5: *Protect the environment, improve air quality and promote energy efficiency.*

Policy RTP G6: *Encourage land use and growth patterns that complement our transportation investments and improve the cost-effectiveness of expenditures.*

Policy GV P1.1: *Encourage transportation investments and land use decisions that are mutually supportive.*

Policy GV P4.2: *Focus development in urban centers and existing cities.*

Policy GV P4.3: *Develop strategies to accommodate growth that uses resources efficiently, eliminate pollution and significantly reduce waste.*

Policy GV P4.4: *Utilize "green" development techniques.*

Riverside County General Plan

The Riverside County General Plan (Riverside County 2015a) is applicable to all unincorporated lands within Riverside County. Countywide policies that address traffic and transportation within the County boundaries are located in the Circulation and Land Use Elements of the County's General Plan (Riverside County 2015a), and include:

Circulation Element (C)

Policy C 2.1. The following minimum target levels of service have been designated for the review of development proposals in the unincorporated areas of Riverside County with respect to transportation impacts on roadways designated in the Riverside County Circulation Plan (Figure-1) which are currently County maintained, or are intended to be accepted into the County maintained roadway system:

LOS C shall apply to all development proposals in any area of the Riverside County not located within the boundaries of an Area Plan, as well those areas located within the following Area Plans: REMAP, Eastern Coachella Valley, Desert Center, Palo Verde Valley, and those non-Community Development areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.

LOS D shall apply to all development proposals located within any of the following Area Plans: Eastvale, Jurupa, Highgrove, Reche Canyon/Badlands, Lakeview/Nuevo, Sun City/Menifee Valley, Harvest Valley/Winchester, Southwest Area, The Pass, San Jacinto Valley, Western Coachella Valley and those Community Development Areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.

LOS E may be allowed by the Board of Supervisors within designated areas where transit-oriented development and walkable communities are proposed.

Notwithstanding the forgoing minimum LOS targets, the Board of Supervisors may, on occasion by virtue of their discretionary powers, approve a project that fails to meet these LOS targets in order to balance congestion management considerations in relation to benefits, environmental impacts and costs, provided an Environmental Impact Report, or equivalent, has been completed to fully evaluate the impacts of such approval. Any such approval must incorporate all feasible mitigation measures, make specific findings to support the decision, and adopt a statement of overriding considerations.

Policy C 2.2. Require that new development prepare a traffic impact analysis as warranted by the Riverside County Traffic Impact Analysis Preparation Guidelines or as approved by the Director of Transportation. Apply level of service targets to new development per the Riverside County Traffic Impact Analysis Preparation Guidelines to evaluate traffic impacts and identify appropriate mitigation measures for new development.

Policy C 2.3. Traffic studies prepared for development entitlements (tracts, plot plans, public use permits, conditional use permits, etc.) shall identify project related traffic impacts and determine the "significance" of such impacts in compliance with CEQA and the Riverside County Congestion Management Program Requirements.

Policy C 20.6. Control dust and mitigate other environmental impacts during all stages of roadway construction.

Policy C 20.15. Implement National Pollutant Discharge Elimination System Best Management Practices relating to construction of roadways to control runoff contamination from affecting the groundwater supply.

Land Use Element (LU)

Policy LU 7.4. Retain and enhance the integrity of existing residential, employment, agricultural, and open space areas by protecting them from encroachment of land uses that would result in impacts from noise, noxious fumes, glare, shadowing, and traffic.

Palo Verde Valley Area Plan

The applicable policy related to traffic and transportation included with the PVVAP is provided below (Riverside County 2015b).

Policy PVVAP 7.2. Maintain Riverside County's roadway Level of Service standards as described in the Level of Service section of the General Plan Circulation Element.

Riverside County Municipal Code Title 10, Chapter 10.08, Sections 10.08.010 – 10.08.180

These regulations establish requirements and permits for oversize and overweight vehicles.

Riverside County Ordinance No. 460

This ordinance specifies that all work shall conform to the requirements of the Riverside County Transportation Department Subdivision Regulations.

Riverside County Ordinance No. 461

This ordinance specifies that all work shall conform to the requirements of the Riverside County Transportation Department Road Improvement Standards and Specifications.

Riverside County Ordinance No. 500.1

This ordinance specifies the permissible weight of vehicles on unimproved County highways.

Riverside County Ordinance No. 524.1

This ordinance regulates oversize and overweight vehicles and loads.

Riverside County Ordinance No. 846

This ordinance specifies the permissible vehicle weight in the community of Mesa Verde/County Service Area (CSA) 122. Pursuant to California Vehicle Code § 35712, any commercial vehicle exceeding a manufacturer's gross vehicle weight rating of 14,000 pounds is prohibited from using the local streets within the community of Mesa Verde and CSA 122 as identified in the restricted list. Certain exemptions apply to commercial vehicles owned by a public utility or a contractor while necessarily in use in the construction, installation, or repair of any public utility are exempt from the vehicle weight restriction.

D.18 UTILITIES AND PUBLIC SERVICES

D.18.1 Regional and Background Information

The Project is located near the City of Blythe. The City of Blythe currently provides nearly 3,300 water service connections to customers, which are located within the City's municipal

boundaries. The City of Blythe is served by four individual water systems: City of Blythe proper water system, Mesa Bluffs water system, Hidden Beaches water system, and East Blythe County water district. Some rural residences within the City's corporate boundary obtain their water from private wells (City of Blythe 2007). The City's water supply is dependent upon a part of the Colorado River entitlement of the PVID. The City of Blythe lies entirely within the PVID service area, and the City's water use is almost entirely accounted for as a part of PVID's water use. PVID's water supply is unique in California. The District holds the Priority 1 rights to California's share of Colorado River water, and a shared portion of the Priority 3 rights, and their rights are not quantified by volume. Rather, their water rights are for irrigation and potable water needed to serve a total of 131,298 acres in the Palo Verde Valley, 26,798 of which are on the Palo Verde Mesa (PVID 2012). The PVID's contract with the Secretary of the Interior limits use of Colorado River water to 16,000 acres on the Lower Palo Verde Mesa for irrigation and potable purposes.

The City of Blythe owns and operates the Regional Wastewater Reclamation Facility, a Class III Facility, located at 15901 South Broadway in the City of Blythe. The City of Blythe also owns a sewage collection, treatment, and disposal system that provides sewage services to the City. The facility treats approximately 1.3 million gallons per day of dry weather flow. The facility is permitted to discharge up to 2.4 million gallons per day of treated wastewater to percolation / evaporation ponds (City of Blythe 2016).

D.18.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

Safe Drinking Water Act

Under the Safe Drinking Water Act (SDWA) (Public Law 93-523), passed in 1974, the USEPA regulates contaminants of concern to domestic water supply. Contaminants of concern relevant to domestic water supply are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by USEPA primary and secondary Maximum Contaminant Levels (MCLs) that are applicable to treated water supplies delivered to the distribution system. MCLs and the process for setting these standards are reviewed triennially. Amendments to the SDWA enacted in 1986 established an accelerated schedule for setting MCLs for drinking water. USEPA has delegated to the California Department of Health Care Services (CDHCS) the responsibility for administering California's drinking-water program. The State Water Resources Control Board is accountable to USEPA for program implementation and for adopting standards and regulations that are at least as stringent as those developed by USEPA. The California Department of Public Health (CDPH) provides laboratory support that ensures the public's safety from unsafe drinking water. The applicable state primary and secondary MCLs for this Project are set forth in 22 CCR §64431 inorganic chemicals), and §64444 (organic chemicals – both volatile and non-volatile and including herbicides).

State

California Government Code §4216.2 Notification of Underground Work

California Government Code §4216.2 requires excavators to contact a regional notification center at least two working days before, but not more than 14 calendar days prior to beginning excavation work. Notification is required to be completed for all areas that are known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the excavator. If practical, the excavator is required to delineate, with white paint or other acceptable markings, the area to be excavated. Additional restrictions are provided for locations within 10 feet of a high priority subsurface installation. Additional provisions are applicable to emergency situations.

14 CCR Division 7.3

Title 14 of the CCR provides minimum requirements for solid waste handling and disposal within the state. The regulations implement standards for the disposal and storage of solid waste, for nonhazardous wastes, and including solid wastes from industrial sources. Specific requirements are included for the handling and disposal of construction and demolition wastes, nonhazardous contaminated soil, waste tires, nonhazardous ash, and inert debris. Additional requirements are provided for transfer and processing facilities, siting and design standards, operation, and record keeping and reporting.

22 CCR Division 4.5

Title 22 of the CCR discusses an array of requirements with respect to the disposal and recycling of hazardous and universal wastes. Specific standards and requirements are included for the identification, collection, transport, disposal, and recycling of hazardous wastes. Additional standards are included for the collection, transport, disposal and recycling of universal wastes, where universal wastes are defined as those wastes identified in 22 CCR §66273.9, including batteries, electronic devices, mercury containing equipment, lamps, cathode ray tubes, and aerosol cans. Requirements include recycling, recovery, returning spent items to the manufacturer, or disposal at an appropriately permitted facility. 22 CCR Division 4.5 also provides restrictions and standards relevant to waste destination facilities, and provides authorization requirements for various waste handlers. Note that Title 22 includes California's Universal Waste Rule, as well as other additional waste handling and disposal requirements.

27 CCR Division 2

Title 27 of the CCR implements regulations of CalRecycle and the State Water Resources Control Board (SWRCB), with respect to disposal of wastes on land. The regulations implement a waste classification and management system, which determines whether or not wastes are compatible with containment features of specific disposal facilities, and whether or not wastes are considered hazardous. Additional requirements are included for the waste disposal sites, including construction standards, liner requirements, siting criteria, and operational management requirements. Water quality monitoring requirements are also included, along with associated contamination response programs. Finally, disposal facility closure and post closure requirements, compliance with reporting programs, and financial assurance requirements are also included.

Integrated Waste Management Act

The Integrated Waste Management Act was enacted in 1989, as AB 939. The Act required each of the cities and unincorporated portions of counties throughout the state of California to divert a minimum of 25 percent of solid waste from landfills by 1995 and 50 percent by 2000. To attain these goals for reductions in disposal, the Act established a planning hierarchy utilizing integrated solid waste management practices. The Act resulted in the creation of the California Integrated Waste Management Board, which is now known as CalRecycle. Under the Act, jurisdictions also have to submit solid waste planning documentation to CalRecycle. The Act also set into place a comprehensive statewide system of permitting, inspections, and maintenance for solid waste facilities, and authorized local jurisdictions to impose fees based on the types and amounts of waste generated.

California Revenue and Taxation Code § 73

California Revenue and Taxation Code § 73 allows property tax exclusion for certain types of solar energy systems installed before December 31, 2016. This section was amended in 2008 to include exemptions for active solar energy systems incorporated by an owner-builder in the initial construction of a new building that the owner-builder does not intend to occupy or us e. Qualifying active solar energy systems are defined as those that are thermally isolated from living space or any other area where the energy is used, to provide for the collection, storage, or distribution of solar energy. These include solar space conditioning systems, solar water heating systems, active solar energy systems, solar-process heating systems, photovoltaic systems, solar thermal electric systems, and solar mechanical energy.

Components included under the exclusion include storage devices, power conditioning equipment, transfer equipment, and parts. Pipes and ducts that are used to carry both solar energy and energy derived from other sources qualify for the exemption only to the extent of 75 percent of their full cash value. Likewise, dual-use equipment for solar-electric systems qualifies for the exclusion only to the extent of 75 percent of its value.

Assembly Bill X1 15, signed by the California governor in June 2011, modified and extended existing state law excluding an “active solar energy system” from calculation of cash value subject to property taxation. An active solar energy system includes PV panels, inverters, and other improvements necessary to deliver electric power for transmission or final use. The exclusion applies to new systems constructed prior to January 1, 2017, and remains in effect until a change in ownership occurs.

Education Code §17620

Education Code § 17620 allows a school district to levy a fee, charge, dedication, or other requirement against any construction within the boundaries of the district for the purpose of funding construction or reconstruction of school facilities, provided the district can show justification for the fees. California Government Code (GC) §65995 limits the fee to a statutory fee unless a school district conducts a Facility Needs Assessment (GC §65995.6) and meets certain conditions. The administering agent implementing school impact fees for the Project is the Palo Verde Unified School District.

California Government Code §§ 65995-65998 (amended by State Bill 50)

California GC §§ 65995-65998 limits fees, charges, dedications, or other requirements for the construction or reconstruction of school facilities. State Bill 50, adopted in 1998, imposed

limitations on the power of cities and counties to require mitigation of school facilities impacts as a condition of approving new development. In the case of industrial construction, the amount of fees and/or charges levied under Education Code § 17620 with support of a Facilities Needs Assessment may not exceed $0.31 per square foot of covered, enclosed space. Development of the Project may require school impact fees.

California Assembly Bill 1826

Effective January 1, 2019, Assembly Bill 1826 requires businesses that generate four cubic yards or more of commercial solid waste per week to arrange for recycling services specifically for organic waste.

Local

Riverside County General Plan

The Riverside County General Plan (Riverside County 2015a) does not have an element that specifically addresses public services and utilities. However, the Plan addresses safety issues through the Safety Element. Issues addressing open space and land use are discussed in the Plan's Multipurpose Open Space Element and the Land Use Element (LU) and include:

Land Use Element

Policy LU 5.1. Ensure that development does not exceed the ability to adequately provide supporting infrastructure and services, such as libraries, recreational facilities, transportation systems, and fire/police/medical services.

Riverside County Ordinance No. 659

This ordinance creates development impact fees "in order to effectively implement the Riverside County Comprehensive General Plan, manage new residential, commercial, and industrial development, and address impacts caused by such development" by providing funds for the construction of new or expanded public service facilities and open space.

Riverside County Countywide Integrated Waste Management Plan (CIWMP)

This CIWMP was prepared by the County to comply with the requirements of AB 939. The CIWMP requires that the County update their landfill disposal capacity annually and certify that they have at least 15 years of remaining disposal capacity.

D.19 VISUAL RESOURCES

D.19.1 Regional and Background Information

The visual character of the regional landscape depends on visual variables such as season, climate, atmospheric and lighting conditions, cultural modifications, and the visibility, presence, and extent of character-defining visual features. The visual quality of the landscape, visual variables, and the manner in which a viewer experiences the landscape setting (i.e., the cumulative impression felt by different types of users traveling through an area) are all factors that combine to produce visual experiences that are unique to the Project, and difficult to quantify. However, the visual character of the region can be broadly generalized within two

primary contexts: the natural landscape and the built environment (i.e., areas where cultural modifications dominate, or nearly dominate the visual character of an area).

Approach to Baseline Analysis

BLM's Visual Resource Management (VRM) Policy is the agency's implementation of requirements from FLPMA and NEPA for managing scenic resources. Pursuant to FLPMA, BLM has developed and applied a standard visual assessment methodology to inventory and manage scenic values on lands under its jurisdiction. BLM Manual 8400-Visual Resource Management (BLM 1984), Handbook 8410-Visual Resource Inventory (BLM 1986a), and Manual 8431-Visual Resource Contrast Rating (BLM 1986b) set forth the policies and procedures for determining visual resource values, establishing management objectives, and evaluating Proposed Actions for conformance to the established objectives for BLM-administered public lands. The following describes the three primary elements of the BLM's VRM Policy.

Determining Visual Resource Values

The primary means to establish visual resource values are to conduct a Visual Resource Inventory (VRI), as described in BLM Handbook H-8410. There are four VRI Classes (I to IV) assigned as a representation of the relative visual value. VRI Class I has the highest value and VRI Class IV has the lowest. VRI Class I is assigned to areas where a management decision was previously made to maintain a natural landscape, such as wilderness areas, wild sections of wild and scenic rivers, and other congressionally and administratively designated areas such as visually sensitive ACECs. Visual resource values are determined through a systematic process that documents the landscape's scenic quality, public sensitivity, and visibility. Rating units for each of these factors are mapped individually, evaluated, and then combined through an over-layering analysis using GIS. The three factors are briefly described below.

Scenic Quality: Scenic Quality Rating Units (SQRUs) are delineated based on common physiographic characteristics of the landscape. There are seven criteria used for inventorying the landscape's scenic quality within each SQRU: landform, vegetation, water, color, influence of adjacent scenery, scarcity, and degree of cultural modification. Each factor is scored for its respective contribution to the scenic quality, the scores are summed, and the unit is given a rating of A (highest), B, or C (lowest) based on the final score.

Sensitivity Level: Sensitivity Level Rating Units (SLRU) are delineated and evaluated for public sensitivity to landscape change. Criteria used for determining level of sensitivity within each unit includes types of use, amount of use, public interest, adjacent land uses, special areas, and other factors. Each criterion is ranked high, medium, or low and an overall sensitivity level rating is then assigned to the unit.

Distance Zones (visibility): The third factor is visibility of the landscape evaluated from where people commonly view the landscape. The distance zones are divided into foreground/middleground (0 to 5 miles); background (5 to 15 miles); and seldom seen (beyond 15 miles or topographically concealed areas within the closer range distance zones).

The relationships between the rated values of scenic quality, sensitivity level, and visibility are cross-referenced with the VRI Matrix to determine the VRI Class, as shown in Table D.19-1.

VRI classes are informational in nature and provide the basis for considering visual values in the RMP process. They are considered the baseline data for existing conditions.

Table D.19-1. Determining Visual Resource Inventory Classes

		Sensitivity Level								
		High			Medium			Low		
Special Areas		I	I	I	I	I	I	I	I	I
Scenic Quality	A	II	II	II	II	II	II	II	II	II
	B	II	III	III/IVa	III	IV	IV	IV	IV	IV
	C	III	IV	IV	IV	IV	IV	IV	IV	IV
			Fg/mg	Bg	Ss	Fg/mg	Bg	Ss	Fg/mg	Bg
		Distance Zones								

Notes:
a. If adjacent area is Class III or lower, assign Class III, if higher assign Class IV.
Fg/mg=Foreground/Middleground
Bg=Background
Ss=Seldom seen
Source: BLM 1986a

Establishing Management Objectives

VRM Classes, defined in Table D.19-2, are determined by considering the assigned VRI Class (visual values) along with resource allocations or special management decisions made in the applicable RMP. Management objectives for each VRM Class set the level of allowable visual change to the landscape that may be permitted for any surface-disturbing activity. The objective of VRM Class I is to preserve the character of the landscape, whereas VRM Class IV provides for activities that require major modification to the landscape.

Table D.19-2. Visual Resource Management Classes

VRM Class	Objective
Class I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Class II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Table D.19-2. Visual Resource Management Classes

VRM Class	Objective
Class IV	The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Source: BLM 1986a

The VRM classes are a land use plan decision and mandate how the visual environment is to be treated in future land management actions and subsequent site-specific implementation decisions. The VRM classes are to be designated for all BLM-administered lands. The VRM class designations may be different than the VRI classes assigned in the inventory. For example, an area with a VRI Class II designation may be assigned a VRM Class IV designation, based on its overriding value for mineral resource extraction, or its designation as a utility corridor.

The applicable RMP for the Project is the CDCA Plan. The CDCA Plan does not contain a visual resource element and has not established VRM Classes. Interim VRM Classifications are typically established when a project is proposed and there are no RMP or Management Framework Plan-approved VRM Classifications. If the area is also without a VRI, then one must be conducted in order to provide a baseline of data by which to analyze impacts and to consider when establishing Interim VRM Classes. The Interim VRM Class for the Project area is discussed in Section 3.19.1.6.

Evaluating Proposed Actions

Proposed plans of development are evaluated for conformance to the VRM Class objectives through the use of the Visual Resource Contrast Rating process set forth within BLM Manual 8431. Because this concerns the environmental consequences of the Proposed Action, this process is further described and applied in Section 4.19.

Scenic Quality Rating

Scenic quality is a measure of the visual appeal of an area created by the features of the landscape, including both natural landscape features (landform, vegetation, water, color, adjacent scenery, and scarcity) and man-made features (roads, structures, and agriculture). The scenic quality of the landscape was assessed based on the criteria used in the BLM VRM system's Visual Resource Inventory (VRI) scenic quality rating system, described in BLM Handbook H-8410, Visual Resource Inventory (BLM 1986a). Criteria including distinctiveness, contrast, variety, harmony, and balance are assessed and scenic quality classes A, B, or C are assigned. Scenic quality classes are defined as follows:

Class A: Areas have outstanding diversity or interest; characteristic features of landform, water, and vegetation are distinctive or unique in relation to the surrounding region. These areas contain considerable variety in form, line, color, and texture.

Class B: Areas have above-average diversity or interest, providing some variety in form, line, color, and texture. The natural features are not considered rare in the surrounding region but provide adequate visual diversity to be considered valuable.

Class C: Areas have minimal diversity or interest; representative natural features have limited variation in form, line, color, or texture in the context of the surrounding region. Discordant cultural modifications (e.g., substations, transmission lines, other cultural modifications) can be highly noticeable, which can reduce the inherent value of the natural setting.

Visual Sensitivity

Visual sensitivity is defined as a measure of public concern for scenic quality (BLM 1986a). Sensitivity Level Rating Units (SLRUs) represent a geographic area where public sensitivity to change of the visual resources is shared amongst constituents. Visual sensitivity ratings within each SLRU are estimated as high, moderate, or low.

Visibility and Distance Zones

Distance zones, or visibility thresholds, for this Project were based on a review of distance zones used by the BLM for VRI assessment (BLM 1986a). Distance zones represent the distance from which the landscape is most commonly viewed and are established by buffering common travel routes and viewer locations at distances of 5 miles and 15 miles.

D.19.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

Federal Land Policy and Management Act

Section 102(a)(8) of the Federal Land Policy and Management Act of 1976 (FLPMA), 43 United States Code (U.S.C.) § 1701(a)(8), states that "...the public lands [are to] be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values." Section 103(c) of the Act, 43 U.S.C. § 1702(c), identifies "scenic values" as one of the resources for which public land should be managed. Section 201(a), 43 U.S.C. § 1711(a), states that "[t]he Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including . . . scenic values)." Section 505(a)(ii) requires that "each right-of-way shall contain terms and conditions which will… minimize damage to scenic and esthetic values." 43 U.S.C. § 1765(a) (ii).

CDCA Plan

Under FLPMA §601, the BLM has developed the CDCA Plan to "provide for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality." Central to the CDCA Plan is the establishment of Multiple Use Classes that govern the management of the public lands based on the sensitivity of the resources and types of uses for each geographic area. As discussed in greater detail in Section 3.10, *Lands, Realty, and Agricultural and Forestry Resources*, multiple use classes are divided into four categories, each of which have specific guidelines for the management of specific resource or activity areas contained and discussed in each of the CDCA Plan Elements. Lands within the

Project area are designated Multiple-Use Class M (Moderate), which allows energy and utility development (BLM 1980).

There is no stand-alone visual resource plan element within the CDCA; however, visual resources values are addressed within the recreation element of the CDCA Plan. According to the recreation element, the BLM will take the following actions to effectively manage for activities involving the alteration of the natural character of the landscape (BLM 1980):

1. The appropriate levels of management, protection, and rehabilitation on all public lands in the CDCA will be identified, commensurate with visual resource management objectives in the multiple use class guidelines.
2. Proposed activities will be evaluated to determine the extent of change created in any given landscape and to specify appropriate design or mitigation measures using the BLM's contrast rating process.

The contrast rating process is a tool used to determine the extent of visual impact that proposed resource management activities would create in a landscape. It serves as a guide for reducing visual impacts to acceptable levels as defined by the visual management objectives and multiple use class guidelines. Applicable visual resource management objectives for a Class III area are defined in Table D.19-2. The visual contrast rating process is further discussed in Section 4.19.

State

No applicable state statutes, regulations, plans, or standards related to visual resources were found.

Local

The Project would be subject to visual policies from the Riverside County General Plan (Riverside County 2015a) and the Palo Verde Valley Area Plan (Riverside County 2015b).

Riverside County General Plan

The Riverside County General Plan (Riverside County 2015a) is applicable to all unincorporated lands within Riverside County. Under the Riverside County General Plan, areas that are visible to the general public and considered visually attractive are deemed to be scenic resources, including scenic corridors, natural landmarks and prominent or unusual features of the landscape (Riverside County 2015a). Countywide policies that seek to preserve visual quality are located in the Land Use Element, Open Space Element, and Circulation Element of the County's General Plan, and include:

Land Use Element (LU)

Policy LU 7.4. Retain and enhance the integrity of existing residential, employment, agricultural, and open space areas by protecting them from encroachment of land uses that would result in impacts from noise, noxious fumes, glare, shadowing, and traffic.

Policy LU 14.1. Preserve and protect outstanding scenic vistas and visual features for the enjoyment of the traveling public.

Policy LU 14.3. Ensure that the design and appearance of new landscaping, structures, equipment, signs or grading within Designated and Eligible State and County scenic highway corridors are compatible with the surrounding scenic setting or environment.

Policy LU 14.4. Maintain at least a 50-foot setback from the edge of the right-of-way for new development adjacent to Designated and Eligible State and County Scenic Highways.

Policy LU 14.5. Require "new or relocated electric or communication distribution lines, which would be visible from Designated and Eligible State and County Scenic Highways, to be placed underground."

Policy LU 30.8. Require that industrial development be designed to consider their surroundings and visually enhance, not degrade, the character of the surrounding area.

Open Space and Circulation Element (OS)

The Public Facilities area plan land use designation provides for the development of private uses with similar characteristics to public uses and includes utility facilities such as public and private electric generating station and corridors. Privately held uses with public facility characteristics are not required to be designated as Public Facilities, but are eligible to be so designated based on site-specific reviews of the characteristics of the use in question.

Policy OS 21.1. Identify and conserve the skylines, view corridors, and outstanding scenic vistas within Riverside County.

Policy OS 22.1. Design developments within designated scenic highway corridors to balance the objectives of maintaining scenic resources with accommodating compatible land uses.

Policy OS 22.4. Impose conditions on development within scenic highway corridors requiring dedication of scenic easements consistent with the Scenic Highways Plan, when it is necessary to preserve unique or special visual features.

Policy C 25.2. Locate new and relocated utilities underground when possible. All remaining utilities shall be located or screened in a manner that minimizes their visibility by the public.

Scenic Corridors

I-10 is not a state- or county-designated scenic highway; however, it has been identified by Riverside County in its Circulation Element as eligible for designation as a scenic corridor. The County has indicated in its General Plan Land Use Element that I-10 should be designated a scenic highway and has developed General Plan scenic corridor policies. These policies seek to maintain resources in corridors along scenic highways. Policies for Scenic Corridors include:

- Preserve and protect outstanding scenic vistas and visual features for the enjoyment of the traveling public.
- Incorporate riding, hiking, and bicycle trails and other compatible public recreational facilities within scenic corridors.
- Ensure that the design and appearance of new landscaping, structures, equipment, signs, or grading within Designated and Eligible State and County Scenic Highway corridors are compatible with the surrounding scenic setting or environment.

- Maintain at least a 50-foot setback from the edge of the right-of-way (ROW) for new development adjacent to designated and eligible State and County Scenic Highways.
- Require new or relocated electric or communication distribution lines that would be visible from Designated and Eligible State and County Scenic Highways to be placed underground.
- Prohibit off-site outdoor advertising displays that are visible from Designated and Eligible State and County Scenic Highways.
- Require that the size, height, and type of on-premise signs visible from Designated and Eligible State and County Scenic Highways be the minimum necessary for identification. The design, materials, color, and location of the signs shall blend with the environment, utilizing natural materials where possible.
- Avoid the blocking of public views by solid walls.

Palo Verde Valley Area Plan

Palo Verde Valley Area Plan (Riverside County 2015b) policies that address visual quality are located in the Local Circulation Policies, Scenic Highways, and include:

PVVAP 10.1. Protect the scenic highways in the Palo Verde Valley planning area from change that would diminish the aesthetic value of adjacent properties in accordance with the Scenic Corridors sections of the General Plan Land Use, Multipurpose Open Space, and Circulation Elements.

Riverside County Airport Land Use Compatibility Plan

Several countywide policies related to glare are included in the Riverside County ALUCP. For more information on the ALUCP, please see Section 3.9, *Hazards and Hazardous Materials*.

D.20 WATER RESOURCES

D.20.1 Regional and Background Information

Beneath the Palo Verde Mesa lies the Palo Verde Mesa Groundwater Basin (PVMGB), which is bounded by non-water-bearing rocks of the mountains to the north, west, and south, and by the Palo Verde Valley and Colorado River to the east. The PVMGB encompasses an area of about 353 square miles or 226,000 acres, is tributary to the lower Colorado River, and is part of the Colorado River aquifer (DWR 2004).

Surface water drains onto the Project site from the surrounding mountains to the north, south, and west, then towards the Colorado River to the east. Although the drainage flows in the direction of the Colorado River, the drainages were determined by the USACE to be ephemeral, intrastate, isolated waters, and not under the jurisdiction of the USACE. There are no perennial streams on the Palo Verde Mesa.

Groundwater

Water Bearing Units

The youngest major units in the Palo Verde region, the Older Alluvium and Younger Alluvium, were deposited by the Colorado River, and are the primary water-bearing units of the local aquifer system. The Older Alluvium comprises all of the known groundwater system deposits of the Palo Verde Mesa and extends beneath the Palo Verde Valley, underlying the Younger Alluvium. The Older Alluvium is much thicker than the Younger Alluvium, reaching thickness of 600 feet beneath the central portion of the valley and the mesa and pinching out along the bordering bedrock mountains.

The Pliocene Bouse Formation underlies the Quaternary sediments. The Bouse Formation includes a marine to brackish-water estuarine sequence deposited in an arm of the proto-Gulf of California (Wilson and Owen-Joyce 1994; Metzger 1968). This formation has alternatively been interpreted as, or may include, lacustrine sediments deposited in a closed, brackish basin (Stone 2006). These unconsolidated to semi-consolidated sediments are reported to yield several hundred gpm in wells perforated within coarse-grained units (Wilson and Owen-Joyce 1994).

The following information is from Metzger et al. (1973). The Bouse Formation is unconformably underlain by a fanglomerate composed chiefly of angular to subrounded and poorly sorted, partially to fully cemented pebbles with a sandy matrix. The fanglomerate is likely of Miocene age; however, it may in part be of Pliocene age. Bedding surfaces generally dip from the mountains towards the basin. The fanglomerate reportedly dips between 2 and 17 degrees near the mountains due to structural warping. The amount of tilting indicates a general decrease in structural movements since its deposition.

Bedrock beneath the site consists of metamorphic and igneous intrusive rocks of pre-Tertiary age that form the basement complex (Metzger et al. 1973). The bedrock topography in the study area has not been determined but appears to lie at depths exceeding 1,000 feet below ground surface (bgs) in Parker Valley which is located over 3 miles northeast of the Project site, and thus bedrock is not likely to be a significant source of water (Metzger et al. 1973).

Aquifer Characteristics

In their development of a two-dimensional superposition model for the Parker-Palo Verde-Cibola area, which includes the PVMGB, Leake et al. (2008) evaluated published aquifer testing data and through statistical analysis derived a range of transmissivity values from a low value of 6,300 ft^2/day to an average value of 26,200 ft^2/day. They selected a storage coefficient of 0.20 to approximate aquifer conditions throughout their model domain, which includes the Chuckwalla Valley Groundwater Basin (CVGB) and the PVMGB.

Metzger et al. (1973) provided historical data from pumping tests that were conducted in the 1960s on wells in the PVMGB. They reported transmissivity values ranging from 64,000 to 1,900,000 gallons per day per foot (gpd/ft) of aquifer thickness (or 8,756 to 254,600 ft^2/day), specific yields from 100 to 2,180 gallons per minute per foot of drawdown, and hydraulic conductivities ranging from 210 to 12,300 gallons per day per square foot (gpd/ft^2). The data are summarized in Table D.20-1. Groundwater production, from wells completed in the PVMGB, averages 1,650 gpm (DWR 1979). The DWR (1979) indicated that large well yields are common

for properly designed and developed wells near the edge of the Palo Verde Valley floodplain, which is east of and adjacent to the PVMGB.

Well yields in the rest of the PVMGB, where sand is the dominant lithology, are lower. Yields greater than 1,000 gpm are reported in wells in the McCoy Wash area. The depth of these wells range from 250 to 600 feet and the wells are 12 to 16 inches in diameter (DWR 1979).

Groundwater Occurrence and Movement

The groundwater below the Project site in the central part of the mesa occurs under apparently semiconfined conditions in the older alluvium at a depth of about 200 feet bgs. In their estimate of groundwater storage, the DWR (1979) used an assumed average saturated thickness of 300 feet and a specific yield of 10 percent for the PVMGB to derive a usable storage of about 5 million AF, with about half of the usable storage estimated to be in the McCoy Wash part of the basin. In subsequent reports, the DWR (2003) listed the groundwater in storage for the basin as "unknown" although the total storage capacity in the basin was estimated to be approximately 6,840,000 AF.

As described in Section 3.7, *Geology and Soils Resources*, the Project site is not crossed by any known active faults or designated Earthquake Fault Zones. No known barriers or faults inhibit the flow of groundwater in the PVMGB (DWR 1978; DWR 2003).

Based on water level elevation contours for the PVMGB and PVVGB drawn from year 2000, the groundwater flows to the southeast towards the Colorado River. Based on the 2000 water level data in the USGS and DWR databases (USGS 2009; as cited in BLM 2010), the hydraulic gradient is about 0.007 ft/ft.

A key feature of the groundwater occurrence and flow within the PVGB is the Palo Verde Irrigation District (PVID) drains situated in the Palo Verde Valley, between the Palo Verde Mesa on the west and the Colorado River on the east. The PVID provides water from the Colorado River to agricultural users in the area, and operates a series of canals which extend through the agricultural areas to the north and west of Blythe. The drains serve to recharge groundwater through leakage, and also serve as a discharge location for groundwater, which is then discharged back to the river through the drains. The water volumes involved comprise a large proportion of the overall groundwater budget for the PVGB.

Historic Groundwater Levels and Flow

AECOM (2009) reported that the water level data from 1971 show local variations in water level contours in the area, which reflects localized pumping in support of agriculture. Water level data from 2000 show that the water levels had recovered in the area due east of the site, and show a southerly flow of groundwater coincident with the flow in the Colorado River. Recovery of groundwater levels may have also been influenced by the application of canal water to mesa crops by PVID, in order to manage salinity. Groundwater flow in the PVMGB is from the north, southeast through McCoy Wash at a gradient of 0.001 ft/ft, then south-southwest at gradients of between about 0.0003 and 0.0008 ft/ft in a direction coincident with the flow of the Colorado River (AECOM 2009).

AECOM (2009) reported that hydrographs indicate that the water level in the PVMGB has generally remained stable over the past few decades, except in areas immediately adjacent to

some pumping wells. In well Township 4 Range 21 Section 9B1 at the north end of the PVMGB, groundwater elevation remained unchanged from 1971 to 2000. In wells north of the DQSP site, groundwater elevations have decreased about 5 feet in well Township 5 Range 22 Section 31E1 from 1966 to 2000 and in well Township 6 Range 22 Section 32R1 from 1947 to 2006. The relatively stable groundwater levels that have been measured over this period suggest that groundwater withdrawal from the underlying aquifer has not significantly changed the water balance within the PVMGB. This is probably in large part due to recharge of water from the Colorado River (AECOM 2009).

Groundwater levels are also evaluated using the Colorado River Accounting Surface methodology proposed by the USGS (USGS 2009). A review of the Figure 6 in the USGS analysis shows that the Accounting Surface elevation in the vicinity of the Project is approximately 237 feet above sea level. From Figure 5 in the Groundwater Modeling Report (URS 2016d), the groundwater elevation in the Project area is approximately 245 to 250 feet above sea level. A value of 245 feet above sea level for the PVMGB is also used in the analysis of the impact of solar project development in the East Riverside SEZ by Greer et. al. (2013).

Groundwater Quality

In general, water quality in the PVMGB is generally higher near the edge of the Palo Verde Mesa adjacent to the Colorado River floodplain. The amount of dissolved solids becomes progressively higher away from the Colorado River floodplain and with depth (AECOM 2011), although the application of surface water in select portions of the PVMGB could result in localized net reductions in dissolved solids concentrations. The groundwater chemistry in the vicinity is generally sodium sulfate-chloride in character (DWR 2003). According to AECOM (2011), the Total Dissolved Solids (TDS) content of shallow groundwater in the basin ranges from 730 to 3,100 milligrams per liter (mg/L), while the TDS of deeper groundwater is higher at 4,500 mg/L.

Table D.20-1 presents the analytical results for a select number of wells that were sampled between October 1962 and April 1966 located in the area. Given the long screen interval for these wells, and the uncertain methodology of sampling the wells, these data likely represent an average water quality of the more permeable sediments over the screen interval. A review of the water quality data for the PVMGB and PVVGB in Table D.20-1 indicate the following:

1. TDS concentrations (466 to 5,640 mg/L) generally exceeded the recommended standard of 500 mg/L for a drinking water resource in California. TDS concentrations above 1,000 mg/L were reported.
2. Fluoride concentrations (0.2 to 6.3 mg/L) in some cases exceed the State of California Maximum Contaminant Levels (MCLs) for drinking water (2.0 mg/L). Fluoride concentrations above the MCL are present in water samples from wells on the Mesa. Concentrations are significantly lower and below the MCL in water samples from wells located in the floodplain.
3. Chloride concentrations range from 77.7 to 3,220 mg/L, and in some cases exceed the State of California Secondary MCL for drinking water (250 mg/L). Higher concentrations are found in wells on the Mesa in the area of McCoy Wash.

4. Boron concentrations range from 40 micrograms per liter [µg/L] to 2,000 µg/L. Based on data collected in 2009, most of the water samples collected underlying that site exceeded the State of California Action Level for drinking water (1,000 µg/L).
5. Sulfate concentrations range from 90 to 1,850 mg/L, and in some cases exceed the State of California Secondary MCLs for drinking water (250 mg/L). The highest concentrations mirror those found for chloride and are located in the area east of the site and in the area of McCoy Wash.

Table D.20-1. Summary of Groundwater Quality Data (all values reported in mg/L[c] unless otherwise indicated)

Analyte[a,b]	Test Well (October 2009)a	Well 5/22-28C1 (Oct-1962)	Well 5/22-33J1 (Oct-1962)	Well 6/21-36R1 (May 1964)	Well 6/22-17L1 (April 1966)	All Palo Verde Mesa Groundwater Basin Wells[a]
Arsenic	ND<0.01	--d	--	--	--	0.0011
Bicarbonates as HCO3	--	--	--	--	--	20 – 736
Boron	1.41	--	--	1.07	1.4	0.04 – 2.0
Calcium	287	--	--	--	--	9.21 – 844
Carbonates as CO3	--	--	--	--	--	0 – 12
Fluoride	1.3	--	1.7	3	--	0.02 – 6.30
Chloride	370	440	400	420	380	77.7 – 3,220
Iron	0.123	--	--	--	--	0 – 0.4
Magnesium	29.6	--	--	--	--	0.1 – 351
Manganese	ND<0.005	--	--	--	--	0 – 3.9
Nitrate	(N)	ND<0.01	--	--	--	--
Selenium	ND<0.015	--	--	--	--	--
Sodium	457	--	--	--	--	0 – 2,000
Sulfate	970	970	380	440	400	90 – 1,850
Total Alkalinity as CaCO3	34	--	--	--	--	28 – 3,600
TDS	2,170	2,160	--	1,470	1,250	466 – 5,640
pH (units)	--	--	--	--	--	7 – 8.6

Notes:
a - Metals data reported from the unfiltered ("total") sample (turbidity at the time of sampling <10NTU).
b - Water quality data for all wells in the Project vicinity are from available information in online databases and historic reports, a summary of which is provided in Appendix J of the AFC. Source: USGS 2009; as cited in BLM 2010.
c - mg/L – milligrams per liter
d - no data reported in available online databases or historic documents
Source: AECOM 2011.

In general, based on available water quality data from the area, groundwater would not meet drinking water quality primary or secondary standards for domestic supply without treatment given the elevated levels of TDS and high concentrations of fluoride, chloride, boron, and sulfate. The data show that generally, TDS and sulfate concentrations were higher with increasing distance from the Colorado River, with the highest concentrations occurring in the area of McCoy Wash and the gap between the PVMGB and CVGB. Fluoride, chloride, and

boron concentrations were generally lower in the eastern portions of the PVMGB (closer to the Colorado River) and increased westward. The much higher TDS concentrations below the Palo Verde Mesa reflect recharge of high TDS water to the PVMGB from percolation along the mountain front and underflow from Rice and Chuckwalla valleys.

Groundwater quality in six areas in the California Desert Region, including the Colorado River, was investigated by the California State Water Resources Control Board in collaboration with the U.S. Geological Survey (USGS) and the Lawrence Livermore National Laboratory as part of the Priority Basin Project of the Groundwater Ambient Monitoring and Assessment (GAMA) Program. Results for the 2007 sampling season were reported in Goldrath et al. (2009), and the full study, encompassing September 2006 through April 2008, was reported by Dawson and Belitz (2012). The results from the Colorado River area of the program were summarized in a fact sheet by the USGS (2013).

In 2007, samples were collected from 28 wells on a regular grid spacing in three study areas, including 15 wells in the Palo Verde Valley and Palo Verde Mesa area. The closest well, COLOR-09, was in the Palo Verde Valley approximately two miles from the Project area. There was no construction information available on this well, so the source of the water is not known. Most wells sampled, including COLOR-09, had specific conductance that exceeded the upper threshold value of the California Department of Public Health secondary maximum contaminant level. No volatile organic compounds, pesticides, contaminants of special interest (such as perchlorate) were detected in well COLOR-09. Concentrations of chloride and fluoride in COLOR-09 exceeded the recommended secondary maximum contaminant level. No other nutrients, metals, or ions exceeded secondary maximum contaminant levels in COLOR-09 (Goldrath et. al. 2009). Perchlorate, an ingredient in rocket fuel, fireworks, and possibly fertilizers, was found at moderate concentrations in 35 percent of the primary aquifers in the Colorado River Study Area, which included the PVGMB and PVVGB (USGS 2013).

Surface Water Quality

Surface water quality is the physical, chemical, and biological characteristics of water, when assessed according to standards related to ecosystem health, the safety of drinking water, and the safety of human contact. The State of California Water Resources Control Board (SWRCB) and the nine RWQCBs are responsible for setting policies and developing regulations for the implementation of water quality control programs mandated by Federal and state water quality statutes and regulations. Water Quality Control Plans, developed and implemented by the RWQCBs, consider regional beneficial uses, water quality characteristics, and water quality problems.

The Project site lies within the East Colorado River Basin Planning Area of the Water Quality Control Plan for the Colorado River Regional Water Quality Control Board (RWQCB). The Water Quality Control Plan (RWCQB 2017) describes surface and groundwater quality objectives for the Planning Area; the objectives were established to protect the existing and potential beneficial uses of surface and groundwater in the region. Beneficial are reasonable uses of a water body as specified in the Water Quality Control Plan, and may include existing, proposed, or intermittent uses. Beneficial uses for water bodies in the Project area are listed in Table D.20-2, and include the following: Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Aquaculture (AQUA), Industrial Service Supply (IND), Ground Water Recharge

(GWR), Water Contact Recreation (REC-1), Non-Contact Water Recreation (REC-2), Warm Freshwater Habitat (WARM), Wildlife Habitat (WILD), Hydropower Generation (POW), and Preservation of Rare, Threatened, or Endangered Species (RARE).

Table D.20-2. Beneficial Uses of Surface Waters in the Project Area

	MUN	AGR	AQUA	IND	GWR	REC-1	REC-2	WARM	WILD	POW	RARE
Colorado River and associated lakes and reservoirs	E	E	E	E	E	E	E	E	E	E	E
Palo Verde Valley Canals	P	E	E		E	E	E	E	E		
Palo Verde Drains						E	E	E	E		
Palo Verde Lagoon and Outfall drain						E	E	E	E		E
Washes (Ephemeral Streams)					I		I	C	I		

Source: Adapted from the Water Quality Control Plan for the Colorado River Basin – Region 7 (RWQCB 2017).
E – Existing use
P – Potential Use
I – Intermittent Use
C – Conditional use, to be determined on a case-by-case basis

Under Section 303(d) of the Clean Water Act (CWA), states, territories, and authorized Tribes are required to develop a list of surface waters with impaired water quality. These waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for surface waters on the lists and develop action plans that establish targets known as Total Maximum Daily Loads (TMDLs) to improve water quality.

D.20.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

Clean Water Act

The CWA established the basic structure for regulating discharges of pollutants into "waters of the United States." The act specifies a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff.

1. Sections 303 and 304, which provide for water quality standards, criteria, and guidelines.

2. Section 401 requires every applicant for a Federal permit or license for any activity that may result in a discharge to a water body to obtain a water quality certification that the proposed activity will comply with applicable water quality standards.
3. Section 402 regulates point- and nonpoint-source discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program. In California, the SWRCB oversees the NPDES program, which is administered by the Regional Water Quality Control Boards (RWQCBs). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits. Anti-backsliding requirements provided for under CWA §§402(o)(2) and 303(d)(4) prohibit slackening of discharge requirements and regulations under revised NPDES permits. With isolated/limited exceptions, these regulations require effluent limitations in a reissued permit to be at least as stringent as those contained in the previous permit.
4. Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the U.S., including some wetlands. Activities in waters of the U.S. that are regulated under this program include fills for development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways and airports), and conversion of wetlands to uplands for farming and forestry. The Los Angeles District of the USACE provides review and permitting services for this Project.

Executive Order 11988 and the Federal Emergency Management Agency (FEMA)

Under Executive Order 11988, FEMA is responsible for management of floodplain areas. FEMA administers the National Flood Insurance Program to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA also issues Flood Insurance Rate Maps that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA, with the minimum level of flood protection for new development determined to be the 1-in-100 annual exceedance probability (i.e., the 100-year flood event).

Safe Drinking Water Act

Under the Safe Drinking Water Act (Public Law 93-523), passed in 1974, the USEPA regulates contaminants of concern to domestic water supply. Contaminants of concern relevant to domestic water supply are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by USEPA primary and secondary Maximum Contaminant Levels (MCLs) that are applicable to treated water supplies delivered to the distribution system. MCLs and the process for setting these standards are reviewed triennially. Amendments to the SDWA enacted in 1986 established an accelerated schedule for setting MCLs for drinking water. USEPA has delegated to the CDPH the responsibility for administering California's drinking-water program. DHS is accountable to USEPA for program implementation and for adopting standards and regulations that are at least as stringent as those developed by USEPA. The applicable state primary and secondary MCLs are set forth in Title 22, Division 4, Chapter 15, Article 4 of the California Code of Regulations.

Energy Independence and Security Act, Section 438

Under Section 438 of the Energy Independence and Security Act of 2007 (EISA), Federal agencies are required to reduce stormwater runoff from Federal development and redevelopment

projects to protect water resources. Federal agencies can comply using a variety of stormwater management practices often referred to as "green infrastructure" or "low impact development" practices, including reducing impervious surfaces and using vegetative practices, porous pavements, cisterns and green roofs.

BLM Water Rights Manual 7250

The BLM Water Rights Manual 7250 establishes policy and guidance for locating, perfecting, documenting, and protecting BLM-administered water rights necessary to manage and conserve the economic and resource values of the public lands. An objective of the BLM eater rights program is to ensure the availability of water for public land management purposes by acquiring and protecting BLM-administered water rights, as part of an overall strategy that may include other cooperative techniques for insuring water availability.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act defines “water quality goals” as the allowable “limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.” Thus, water quality goals are intended to protect the public health and welfare, and to maintain or enhance water quality in relation to the existing and/or potential beneficial uses of the water. Water quality objectives apply to both Waters of the United States and Waters of the State.

Water Quality Control Plans

The SWRCB requires individual RWQCBs to develop Water Quality Control Plans (also known as Basin Plans) designed to preserve and enhance water quality and protect the beneficial uses of all Regional waters. Specifically, Water Quality Control Plans designate beneficial uses for surface waters and groundwater, set narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state’s antidegradation policy, and describe implementation programs to protect all waters in the Regions. In addition, Water Quality Control Plans incorporate by reference all applicable state and Regional Board plans and policies, and other pertinent water quality policies and regulations. The Project is under the jurisdiction of the Water Quality Control Plans of the Colorado River Regional Water Quality Control Board.

Colorado River Regional Water Quality Control Plan

The Colorado River RWQCB’s Water Quality Control Plan establishes water quality objectives, including narrative and numerical standards that protect the beneficial uses of surface and ground waters in the region. The Water Quality Control Plans describes implementation activities and other control measures designed to ensure compliance with statewide plans and policies, and to provide comprehensive water quality planning.

Beneficial water uses are of two types: consumptive and non-consumptive. Consumptive uses are those normally associated with human activities, primarily municipal, industrial and irrigation uses that consume water and cause corresponding reduction and/or depletion of water supply. Non-consumptive uses include swimming, boating, waterskiing, fishing, hydropower

generation, and other uses that do not significantly deplete water supplies. Historical beneficial uses of water within the Colorado River Basin Region have largely been associated with irrigated agriculture and mining. Industrial use of water has become increasingly important in the region, particularly in the agricultural areas.

With respect to present beneficial uses, agricultural use is the predominant beneficial use of water in the Colorado River Region, with the major irrigated acreage being located in the Coachella, Imperial, and Palo Verde valleys. The next largest use of water is for municipal and industrial purposes. The third major category of beneficial use, recreational use of surface waters, represents another important segment of the region's economy. The Colorado River Basin Region functions as a portion of the larger Colorado River watershed, which supplies water for agricultural and urban uses, fisheries, hydroelectric power production, recreation, and international treaty obligations.

According to the Water Quality Control Plan, all surface and ground waters are considered to be suitable, or potentially suitable, for municipal or domestic water supply with the exception of:

1. Surface and ground waters where the TDS exceed 3,000 mg/L, and the source is not reasonably expected by the RWQCB to supply a public water system, or
2. There is contamination, either by natural process or human activity, that cannot be treated for domestic use using either best management practices or best economically achievable treatment practices, or
3. The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (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. The 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.

California Fish and Game Code §1601-1603

Sections 1601-1603 of the CDFW Fish and Game Code protect the natural flow, bed, channel, and bank of any river, stream, or lake designated by the CDFW, in which there is at any time an existing fish or wildlife resource, or from which these resources derive benefit. General Project plans must be submitted to the CDFW in sufficient detail to indicate the nature of a project for construction, if the project would:

- Divert, obstruct, or change a streambed, bank, or riparian zone.
- Use material from the streambeds.
- Result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a stream.

The Inland Deserts Region of the CDFW serves Riverside County.

22 CCR §§ 64400.80-64445

These CCR sections require monitoring for potable water wells, defined as non-transient, non-community water systems (serving 25 people or more for more than 6 months). Regulated wells must be sampled for bacteriological quality once a month and the results submitted to the CDPH for review and comment. The wells must also be monitored for inorganic chemicals once and organic chemicals quarterly during the year designated with the year designation based on historical monitoring frequency and laboratory capacity.

27 CCR §§ 20200

27 CCR §§ 20200 *et seq.* provides a waste classification system that applies to wastes that cannot be discharged to waters of the state. Applicable facilities include evaporation ponds, as well as various other types of disposal.

California Water Code §13751

California Water Code §13751 requires a Report of Well Completion to be filed with the DWR within 60 days of well completion. New wells must comply with DWR Well Standards as described in Water Resources Bulletins 74-81 and 74-90.

Construction Stormwater Program

The SWRCB and the nine RWQCBs implement water quality regulations under the Federal CWA and the California Porter-Cologne Water Quality Control Act. Existing water quality regulations require compliance with the NPDES for discharges of stormwater runoff associated with construction activity.

Dischargers are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction and Land Disturbance Activities (Construction General Permit, 2009-0009-DWQ). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map(s) that shows the construction site perimeter, existing and proposed structures, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the Project. The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect stormwater runoff and the placement of those BMPs. Additionally, the SWPPP must contain a monitoring program for visible and non-visible pollutants and changes in water quality, such as substantial alteration in pH (a measure of acid and base properties).

Senate Bill 610

SB 610 requires that a Water Supply Assessment (WSA) be prepared for certain projects subject to CEQA that will use water. The WSA is required to address the sources of water for the Project, and an assessment of the sufficiency of those sources to serve the Project over a period of 20 years.

D.21 WILDLAND FIRE

D.21.1 Regional and Background Information

The behavior and characteristics of wildfires are dependent on a number of biophysical and anthropogenic (human-caused) factors. The biophysical variables are fuels (including composition, cover, and moisture content), weather conditions (particularly wind velocity and humidity), topography (slope and aspect), and ignition sources (e.g., lightning). The anthropogenic variables are ignitions (e.g., arson, smoking, and power lines) and management (wildfire prevention and suppression efforts).

Vegetation with low moisture content is more susceptible to ignitions and burns more readily than vegetation with higher moisture content. Grasses tend to ignite more easily and burn faster, but tend to burn for a shorter duration than woody vegetation such as shrubs and trees. Continuity of fuels helps sustain wildland fires. Dense vegetation tends to carry a fire farther than patchy vegetation. The presence of invasive annual grasses, however, can provide fuel connectivity in patchy desert shrublands that would otherwise provide inconsistent fuel for a wildland fire. High winds provide oxygen to wildfires and can also blow glowing embers off burning vegetation to areas far ahead of the front of a fire, allowing fires to jump fuelbreaks in some cases. Conditions of low relative humidity will dry out fuels, increasing the likelihood of ignition. Finally, steep slopes and slopes with exposure to wind will carry fires rapidly uphill, and fires that are extinguished in mountainous areas are often contained along ridgelines.

Larrea tridentata and *Larrea tridentata-Ambrosia dumosa* shrublands are the dominant plant alliances covering almost the entire Project area, except for two small areas of *Parkinsonia florida - Olneya tesota* on the northern perimeter of the area. Major threats to these community types include fire, grazing, OHV use, and invasive species. These vegetation types are not fire-adapted. Fire, particularly repeated wildfire, is deleterious to these plant communities and tends to deplete the native woody shrubs that characterize and dominate these communities in favor of exotic weedy annuals.

Compared to other parts of the state, there are relatively few fires in the NECO Plan area and most are small. Between 1980 and 1995, a handful of fires burned a total of about 6,000 acres, all outside the study area (BLM 2002).

BLM and the National Park Service (NPS) have collaborated in the development of the *Fire Management Activity Plan (FMAP) for the California Desert* (1996) which brings together fire management goals for biological resources, wilderness, and other sources. The FMAP establishes fire management standards and prevention and protection programs as well as limitations on fire suppression methods in critical habitat and other Mojave desert tortoise habitat designed to limit habitat disturbance while keeping fires small (BLM 2002).

Exotic and invasive weedy annual plants such as Mediterranean grass (*Schismus barbatus*) and red brome (*Bromus madritensis*) completely occupy ground cover in some areas of the NECO Plan area, where disturbances such as livestock grazing, off highway vehicle (OHV) use, development and fire have contributed to the spread of exotic annuals by displacing native annual and perennial grasses and forbs (Brooks 1998; Malo and Suarez 1995 as cited in BLM 2002).

Fire Hazard Severity Zones (FHSZs) are areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors that have been mapped by CAL FIRE. FHSZs are ranked

from moderate to very high and are categorized for fire protection as within a Federal responsibility area (FRA) under the jurisdiction of a Federal agency, within a state responsibility area (SRA) under the jurisdiction of CAL FIRE, or within a local responsibility area (LRA) under the jurisdiction of a local agency.

D.21.2 Applicable Statutes, Regulations, Plans, and Standards

Federal

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) requires utilities to adopt and maintain minimum clearance standards between vegetation and transmission voltage power lines. These clearances vary depending on voltage. In most cases, however, the minimum clearances required in state regulations are greater than the Federal requirement. In California for example, the state has adopted General Order 95 rather than the NERC Standards as the electric safety standard for the state. Since the state regulations meet or exceed the FERC standards, the FERC requirements are not discussed further in this section, as compliance with the state requirements will ensure that the Federal requirements are met.

Federal Wildland Fire Management Policy

The Federal Wildland Fire Management Policy was developed in 1995 and updated in 2001 by the National Wildfire Coordinating Group, a Federal multi-agency group that establishes consistent and coordinated fire management policy across multiple Federal jurisdictions. An important component of the Federal Wildland Fire Management Policy is the acknowledgement of the essential role of fire in maintaining natural ecosystems. The Federal Wildland Fire Management Policy and its implementation are founding on the following guiding principles:

1. Firefighter and public safety is the first priority in every fire management activity.
2. The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
3. Fire management plans, programs, and activities support land and resource management plans and their implementation.
4. Sound risk management is a foundation for all fire management activities.
5. Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
6. Fire management plans and activities are based upon the best available science.
7. Fire management plans and activities incorporate public health and environmental quality considerations.
8. Federal, state, tribal, local, interagency, and international coordination and cooperation are essential.
9. Standardization of policies and procedures among Federal agencies is an ongoing objective.

International Fire Code

Created by the International Code Council, the International Fire Code addresses a wide array of conditions hazardous to life and property including fire, explosions, and hazardous materials handling or usage. The International Fire Code places an emphasis on prescriptive and performance-based approaches to fire prevention and fire protection systems. Updated every 3 years, the International Fire Code uses a hazards classification system to determine the appropriate measures to be incorporated in order to protect life and property (often, these measures include construction standards and specialized equipment). The International Fire Code uses a permit system based on hazard classification to ensure that required measures are instituted.

North American Electric Reliability Corporation Standards

The NERC is a nonprofit corporation comprising 10 regional reliability councils. The overarching goal of NERC is to ensure the reliability of the bulk power system in North America. To achieve its goal, the NERC develops and enforces reliability standards, monitors the bulk power systems, and educates, trains, and certifies industry personnel (NERC 2014). In order to improve the reliability of regional electric transmission systems and in response to the massive widespread power outage that occurred on the Eastern Seaboard, NERC developed a transmission vegetation management program that is applicable to all transmission lines operated at 200 kV and above to lower voltage lines designated by the Regional Reliability Organization as critical to the reliability of the electric system in the region. The plan, which became effective on April 7, 2006, establishes requirements of the formal transmission vegetation management program, which include identifying and documenting clearances between vegetation and any overhead, ungrounded supply conductors, while taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, fire risk, line terrain and elevation, and the effects of wind velocities on conductor sway (NERC 2006). The clearances identified must be no less than those set forth in the IEEE Standard 516-2003 (*Guide for Maintenance Methods on Energized Power Lines*).

Institute of Electrical and Electronics Engineers Standard 516-2003

The IEEE is a leading authority in setting standards for the electric power industry. Standard 516-2003, *Guide for Maintenance Methods on Energized Power Lines*, establishes minimum vegetation-to-conductor clearances in order to maintain electrical integrity of the electrical system.

State

California Fire Code

The California Fire Code is contained within Title 24, Chapter 9 of the CCR. Based on the International Fire Code, the California Fire Code is created by the California Buildings Standards Commission and regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. Similar to the International Fire Code, the California Fire Code and the CBC use a hazards classification system to determine the appropriate measures to incorporate to protect life and property.

Title 14 CCR §§1250-1258, Fire Prevention Standards for Electric Utilities, provides specific exemptions from electric pole and tower firebreak and electric conductor clearance standards, and specifies when and where standards apply.

California Health and Safety Code

State fire regulations are established in §13000 of the California Health and Safety Code. The section establishes building standards, fire protection device equipment standards, high-rise building and childcare facility standards, interagency support protocols, and emergency procedures. Also, §13027 states that the state fire marshal shall notify industrial establishments and property owners having equipment for fire protective purposes of the changes necessary to bring their equipment into conformity with, and shall render them such assistance as may be available in converting their equipment to, standard requirements.

California Public Resources Code

The Public Resources Code (PRC) includes fire safety regulations that apply to SRAs during the time of year designated as having hazardous fire conditions. During the fire hazard season, these regulations restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on equipment that has an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire-suppression equipment that must be provided on-site for various types of work in fire-prone areas.

PRC §4291 provides that a person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material, shall at all times maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line.

PRC §§4292 and 4293 require that any person who owns, controls, operates, or maintains any electrical transmission or distribution line shall maintain a firebreak clearing around and adjacent to any pole, tower, and conductor that carries electric current as specified in the section.

California Strategic Fire Plan

The 2010 Strategic Fire Plan for California is the statewide plan for adaptive management of wildfire. The Fire Plan is a cooperative effort between the State Board of Forestry and Fire Protection and the CAL FIRE. The central goals that are critical to reducing and preventing the impacts of fire revolve around both suppression efforts and fire prevention efforts. The key goals of the plan are:

1. Improved availability and use of information on hazard and risk assessment;
2. Land use planning: including general plans, new development, and existing developments;
3. Shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as Community Wildfire Protection Plans;
4. Establishing fire resistance in assets at risk, such as homes and neighborhoods;
5. Shared vision among multiple fire protection jurisdictions and agencies;

6. Levels of fire suppression and related services; and
7. Post-fire recovery.

The plan puts emphases on pre-fire adaptive management of risk, including measures such as fuelbreaks, defensible space, and other fuel reduction strategies. The Fire Plan does not contain any specific requirements or regulations. Rather, it acts as an assessment of current fire management practices and standards and makes recommendations on how best to improve the practices and standards in place (CAL FIRE 2010).

Fire Hazard Severity Zones

CAL FIRE mapped FHSZs in Riverside County based on fuel loading, slope, fire weather, and other relevant factors under the direction of PRC §§4201-4204 and Government Code §§51175-89. FHSZs are ranked from moderate to very high and are categorized for fire protection as within a FRA under the jurisdiction of a Federal agency, within a SRA under the jurisdiction of CAL FIRE, or within a LRA under the jurisdiction of a local agency.

Public Resources Code §§4292-4293, Powerline Hazard Reduction

PRC §4292 requires and presents guidelines for a 10-foot firebreak consisting of a clearing of not less than 10 feet in each direction from the outer circumference of the base of power poles. PRC §4293 requires and presents guidelines for maintaining a 4-foot clearance in all directions between all vegetation and all conductors carrying between 2.4 and 72 kV, and a 10-foot clearance for lines carrying over 110 kV. The proposed distribution line would operate at 34.5 kV, and the gen-tie line would operate at 230 kV.

14 California Code of Regulations, Sections 1250 – 1258, "Fire Prevention Standards for Electric Utilities"

14 CCR provides specific exemptions from electric pole and tower firebreak. 14 CCR also provides conductor clearance standards and specifies when and where standards apply. These standards address hazards that could be caused by sparks from conductors of overhead lines, or that could result from direct contact between the line and combustible objects. The proposed Project would be subject to these standards.

Local

Riverside County Fire Department Fire Prevention Standards

In accordance with the 2010 California Fire Code, the RCFD incorporated the Fire Apparatus Access Roads standard (§503) and Knox Box Emergency Access System standard (§506) into its operational standards. Under these standards, all required building plans must be submitted to the RCFD for review and approval of access roads and points and Knox Box mounting location and position and operating standards prior to installation.

Riverside County General Plan

Safety Element (S)

Fire Hazards – Building Code and Performance Standards

Policy S 1.1. Mitigate hazard impacts through adoption and strict enforcement of current building codes, which will be amended as necessary when local deficiencies are identified.

Policy S 5.1. Develop and enforce construction and design standards that ensure that proposed development incorporates fire prevention features through the following:

a) All proposed development and construction within Fire Hazard Severity Zones shall be reviewed by the Riverside County Fire and Building and Safety departments.

b) All proposed development and construction shall meet minimum standards for fire safety as defined in the Riverside County Building or County Fire Codes, or by County zoning, or as dictated by the Building Official and Management Agency based on building type, design, occupancy, and use.

c) In addition to the standards and guidelines of the California Building Code and California Fire Code fire safety provisions, continue to implement additional standards for high-risk, high occupancy, dependent, and essential facilities where appropriate under the Riverside County Fire Code (Ordinance No. 787) Protection Ordinance. These shall include assurance that structural and nonstructural architectural elements of the building will not impede emergency egress for fire safety staffing/personnel, equipment, and apparatus, nor hinder evacuation from fire, including potential blockage of stairways or fire doors.

d) Proposed development and construction in Fire Hazard Severity Zones shall provide secondary public access, in accordance with Riverside County Ordinances.

e) Proposed development and construction in Fire Hazard Severity Zones shall use single loaded roads to enhance fuel modification areas, unless otherwise determined by the Riverside County Fire Chief.

Riverside County Brush Clearance

County of Riverside Ordinance No. 695 provides brush clearance requirements on unincorporated County land that are designed to reduce risks from wildland fires. The code requires that every owner, occupant, and person in control of any unimproved parcel of land clear vegetation on a 100-foot-wide strip of land at the boundary of the parcel adjacent to a roadway and/or a 100-foot-wide strip of land around any structures located on an adjacent improved parcel. The Riverside County Fire Department can require different clearance distances based upon a visual inspection of the parcel and factors including local weather conditions, fuel types, topography, and the environment where the property or adjoining structures are located.