

### 2.0 ENVIRONMENTAL SETTING

The project sites encompass a total of 1,422 acres located in Imperial County, California. Imperial County encompasses over 4,597 square miles or 2,942,080 acres of land, bordered by Mexico to the south, Riverside County to the north, San Diego County on the west, and the State of Arizona on the east. The terrain varies from 235 feet below sea level at the Salton Sea to 4,548 feet at Blue Angel Peak.

The climate is hot and dry, ranging from lows in the mid 30s in January to highs of 110 degrees (°) and above in July and August (mean temperatures: low-55.0°; high-89.6°), with little moisture (average annual rainfall: 2.92 inches; 25 percent average relative humidity) (Imperial County General Plan, as amended through 2008). Most of the rainfall occurs in conjunction with monsoonal conditions between May and September, with an average annual rainfall of less than 3.0 inches where the projects are located. The 10-year, 24-hour estimated precipitation amount for the project area is 1.8 inches; while the 100-year, 24-hour estimated precipitation is 3.0 inches (Western Regional Climate Center 2004).

Approximately 19 percent of the land in Imperial County is irrigated for agricultural purposes, most notably the central area known as Imperial Valley (473,311 acres). The rich soils of Imperial County, particularly of the Imperial Valley, were created by periodic flooding of the Colorado River over thousands of years which left deep, rich deposits of silt. Favorable climate, productive soils, and the availability of irrigated water have permitted Imperial County to become a leading producer of agricultural products. Irrigation agriculture in the County is extremely diverse and includes numerous types of vegetable crops including lettuce, carrots, onions, tomatoes, cauliflower, and broccoli; alfalfa, Sudan grass, and other animal feed; sugar beets; wheat and other grains; melons; cotton; various citrus fruits, and nuts. Two resources that are vital to past and future agricultural production are productive soils and adequate water availability (Imperial County General Plan, as amended through 2008).

Imperial County is, and will continue for the foreseeable future to be, a predominantly agricultural area; however, a significant increase in urbanization since 2003 has occurred, including recently developed, and developing solar facilities, and other alternative energy projects such as geothermal. Most of Imperial County, approximately 50 percent, is still largely undeveloped or under federal ownership. According to the Southern California Association of Governments (SCAG), the population of Imperial County is 174,528 (based on 2010 census data) and has increased by 32,167 within the past decade. The developed area where the County's incorporated cities, unincorporated communities, and supporting facilities are situated comprise less than one percent of the land (Imperial County General Plan, as amended through 2008). There are 13 residences located within or in close proximity to the project sites. Four residences are located within the boundaries of the project sites, and nine are located adjacent to the project sites (within approximately 100-200 feet).

### 2.1 LOCATION OF PROJECTS AND STUDY AREA

Each of the four proposed solar farm sites, and including the off-site transmission facilities, are located west of Calexico, California in southern Imperial County (County) (see Figure 3.0-1). The closest project site boundary to the City of Calexico is the eastern boundary of the Iris Solar Farm project site. This boundary is approximately two miles west of the City of Calexico. The project sites include all or portions of Sections 6,7 Township 17 south, Range 14 east and Sections, 1,3,11,12 Township 17 south, Range 13 east San Bernardino baseline and meridian. The geographic center of the project sites roughly correspond with 32.686 latitude, -115.600 longitude.

Four separate Conditional Use Permit (CUP) applications and four Variance requests which would accompany these applications have been filed with the County, which together define the project sites. The four CUP applications or individual site locations consist of the following:

- Ferrell Solar Farm (FSF);
- Rockwood Solar Farm (RSF);
- Iris Solar Farm (ISF); and
- Lyons Solar Farm (LSF).

The project sites are located adjacent to three approved or planned solar farms. These include the previously-approved Mount Signal and Calexico Solar Farm Projects, and the proposed Wistaria Ranch Solar Farm. The project study areas border the Calexico II-B and Wistaria Ranch Solar Farms on three sides. For description of the project components for each project, see Section 3.0, Project Description.

### 2.1.1 Transmission and Collector Facilities

The projects would connect to existing electrical transmission infrastructure to enable the export and sale of electricity via the California Independent System Operator (ISO) grid. Transmission and collector lines would extend along private lands, traversing the project area both west to east and north to south along major roads (e.g., Kubler Road, State Route [SR] 98, George Road, Corda Road, and Ferrell Road) and other local roadways.

The interconnection for the proposed projects will occur at the 230 kilovolt (kV) side of the San Diego Gas & Electric (SDG&E) Imperial Valley (IV) Substation, located approximately 5 miles northwest of the project sites, via the existing Mount Signal Solar Farm substation and its shared 230 kV electrical transmission line. Power from the proposed projects may first be collected at one or more shared on-site substations via overhead and/or underground collector line(s).

## 2.2 PHYSICAL CHARACTERISTICS

### 2.2.1 Aesthetics

The solar field component of the project sites is located in southern Imperial Valley, just north of SR 98, and is characterized as an agricultural landscape with generally level topography. Visual features within this portion of the project area include numerous agricultural canals that supply water to the project sites and agricultural related structures (e.g., silos). The City of Calexico is located to the east of the solar field portion of the project sites with the East Mesa sand dunes located further east. Areas to the north and south of this area are generally level and characterized by an agriculturally-dominated landscape.

### 2.2.2 Agricultural Resources

Much of the land base in the vicinity of and within the project sites and off-site transmission areas is considered productive farmland where irrigation water is available. Farming operations in this area generally consist of medium to large-scale crop production with related operational facilities. Crops generally cultivated in the area may include alfalfa, barley, and/or Bermuda grass in any given year. Row and vegetable crops (such as corn, melons, wheat) are also prominent in the area. Areas further to the north are also utilized for irrigated agricultural production and non-irrigated pasture for cattle grazing. However, as shown on Figure 4.2-2, a majority of the currently vacant agricultural lands surrounding the project area have been approved for, or are currently proposed for, the development of utility-scale solar energy projects. These lands are anticipated to transition into solar energy use in the near future. When surveyed as part of the biological resources assessment for the Iris Cluster Solar Farm, the project sites were planted with Bermuda, alfalfa, sweet corn, melons, wheat, and sudan.

### 2.2.3 Air Quality

The project area is located in the Salton Sea Air Basin (SSAB) under the jurisdiction of the Imperial County Air Pollution Control District's (ICAPCD). The SSAB, which contains part of Riverside County and all of Imperial County, is governed largely by the large-scale sinking and warming of air within the semi-permanent subtropical high-pressure center over the Pacific Ocean. The high-pressure ridge blocks out most mid-latitude storms, except in winter when the high is weakest and farthest south. When the fringes of mid-latitude storms pass through the Imperial Valley in winter, the coastal mountains create a strong "rainshadow" effect that makes Imperial Valley the second driest location in the United States. The flat terrain near the Salton Sea, intense heat from the sun during the day, and strong radiational cooling at night create deep convective thermals during the daytime and equally strong surface-based temperature

inversions at night. The temperature inversions and light nighttime winds trap any local air pollution emissions near the ground. The area is subject to frequent hazy conditions at sunrise, followed by rapid daytime dissipation as winds pick up and the temperature warms.

Currently, the SSAB is either in attainment or unclassified for all federal and state air pollutant standards with the exception of 8-hour ozone (O<sub>3</sub>), particulate matter less than 10 microns in diameter (PM<sub>10</sub>), and particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>). Imperial County is classified as a "serious" non-attainment area for PM<sub>10</sub> and a "moderate" non-attainment area for 8-hour ozone for the NAAQS and non-attainment for PM<sub>2.5</sub> for the urban areas of Imperial County. Air pollutants transported into the SSAB from the adjacent South Coast Air Basin (Los Angeles, San Bernardino County, Orange County, and Riverside County) and from Mexicali, Mexico substantially contribute to the non-attainment conditions in the SSAB. The closest air quality monitoring station to the project study areas are the Calexico-Ethyl station located within the City of Calexico (1029 Belcher Street, Calexico, CA 92231) and the El Centro-9<sup>th</sup> station within the City of El Centro (150 9<sup>th</sup> Street, El Centro, CA 92243). Both monitoring stations measure PM<sub>10</sub>, PM<sub>2.5</sub>, carbon monoxide (CO), and nitrogen dioxide (NO<sub>2</sub>). The Calexico monitoring station also monitors SO<sub>2</sub>.

### 2.2.4 Biological Resources

The project sites, including off-site transmission areas are located entirely on active agricultural fields; and are being farmed with crops including Bermuda, alfalfa, sweet corn, melons, wheat, and sudan. Due to the active agricultural and disturbed nature found within the project area, no rare or special species plants are known or expected to exist and no federally listed wildlife species were observed during field surveys within the agricultural areas of the project sites and off-site transmission areas. The active agricultural fields do not provide habitat for the southwestern willow flycatcher, Yuma clapper rail, least Bell's vireo, or desert pupfish. Although agricultural fields are too heavily disturbed to provide nesting sites, the solar farm portion of the project site provides suitable foraging habitat and resting conditions for migratory birds. Several burrowing owls (fully protected species) have been observed on-site and were also found off-site within the Imperial Irrigation District (IID) right-of-way (ROW). Additionally, the project sites provide suitable habitat for loggerhead shrike, yellow warbler, ferruginous hawk, mountain plover, long billed curlew, short billed dowitcher, and horned lark (California Department of Fish and Wildlife [CDFW] species of special concern) and there is potential for these species to be found on site. No riparian habitat or sensitive natural communities were observed any of the sites.

### 2.2.5 Cultural Resources

Thousands of prehistoric (aboriginal culture and systems existing prior to 1769) and hundreds of historic (uncovered facts containing no known historical documentation) are found throughout Imperial County. Prehistoric evidence in the form of trails, rock art, geoglyphs, fish traps, and resource procurement and manufacturing locations are found in the regions surrounding the fertile valley portion of the county. From a historical standpoint, the intensive use of Imperial Valley for irrigation agriculture since the beginning of this century has impacted any resources that may have existed on land that is now farmland or under the Salton Sea. Historic resource sites date back to 1540, when the Hernando de Alcaron Expedition discovered Alta California from near the intersection of Interstate 8 and Highway 186. The next major historical event occurred in 1775 when Juan Bautista de Anza first passed through the area. The Anza Trail itself constitutes a significant cultural resource in the Yuha Desert, as does the later Sonoran/Southern Emigrant Trail which served as a major route to and from coastal California from 1825 to 1865. Although very few structures or artifacts may remain from the use of these trails, the routes themselves are of historical significance. Various other structures, such as missions (Spanish period 1769-1821) and a fort (Mexican period 1821-1848) are still evident in regions throughout the county (Imperial County).

Literature review of the project area indicates that there are no historical resources that have been recorded within a 1-mile radius of the proposed solar projects or within the project sites themselves. No cultural resources have been previously identified within the RSF and LSF project sites. One cultural resource has been previously identified within the FSF project site and is identified as a mesquite thicket

(CA-IMP-3325). Two cultural resources have been previously identified within the ISF project study area and are identified as a mesquite grove (CA-IMP-3309) and a destroyed cross road (CA-IMP-3326).

### 2.2.6 Geology and Soils

The project area is located in the Colorado Desert Physiographic province of southern California. The dominant feature of the Colorado Desert province is the Salton Trough, a geologic structural depression resulting from large-scale regional faulting. The trough is bounded on the northeast by the San Andreas Fault and Chocolate Mountains and the southwest by the Peninsular Range and faults of the San Jacinto Fault Zone. The Salton Trough represents the northward extension of the Gulf of California, containing both marine and non-marine sediments since the Miocene Epoch. Tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of seismicity (LCI 2013a-d).

The project area is located in a seismically active region, with potential for strong ground shaking associated with earthquakes. The faults/fault zones within the vicinity of (15 miles) and surrounding the project area include (but are not limited to) the Brawley Fault Zone, Imperial Fault Zone, Laguna Salada Fault Zone, Superstition Hills Fault, Superstition Mountain Fault, Wienert Fault, and the Yuha Wells Fault. The predominant surface soil is a silty clay loams and sandy loams in portions of the project sites along the New River (FSF and ISF). At depth, these materials transition from late Pleistocene<sup>1</sup> - to Holocene<sup>2</sup> - aged lake deposits that are expected to be less than 100 feet thick and derived from periodic flooding of the Colorado River, which intermittently formed Lake Cahuilla (LCI 20110a-d).

### 2.2.7 Hazards and Hazardous Materials

The project area is comprised of several agricultural fields that have been in and are currently in crop production since approximately the mid 1940s. No hydrocarbon stains were noted in the Phase I Environmental Site Assessments (ESAs); however, sites have the potential for hydrocarbon due to the machinery use associated with the agricultural land uses. Due to the previous common use of pesticides, there is a potential for portions of the project area to contain hazards related to pesticide and herbicide use from aerial and/or ground application.

The Corda residence and farm shop are located within the boundaries of the FSF site, and contain two aboveground storage tanks (ASTs) within a concrete fuel containment area. The abandoned labor camp contains a propane tank, an AST and two newer mobile homes located within the boundaries of the ISF site.

No evidence of groundwater or oil and gas wells were observed on the sites within or adjacent to the project sites during the site reconnaissance conducted by GS Lyon in 2013; however, according to the Division of Oil, Gas, and Geothermal Resources (DOGGR) database, five abandoned geothermal wells are located within or adjacent to the boundaries of the project sites. One oil well (in production) is located off-site, south of SR-98 and Ferrell Road. No other oil or gas wells were identified within or adjacent to the project sites, including the off-site transmission area. Pole-mounted transformers were noted within the project sites; however, no evidence of leakage from the transformers within the project area was observed.

The project area is located within a seismically active region within proximity to several nearby faults. Additionally, a crop duster airstrip and maintenance yard with storage of pesticides and herbicides is located within 0.5 mile southeast of the ISF.

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<sup>1</sup> The Pleistocene is the epoch from 2,588,000 to 11,700 years before present. The end of the Pleistocene corresponds with the end of the last glacial period.

<sup>2</sup> The Holocene epoch extends from 11,700 years to present.

### 2.2.8 Hydrology/Water Quality

The project sites are located within the Colorado River Basin Regional Water Quality Control Board (RWQCB) (Region 7) which covers 13 million acres and encompasses all of Imperial County. The project sites are located within the Imperial Valley Planning Area, one of the six planning areas within the Colorado River Basin. This planning area comprises 2,500 square miles in the southern portion of the region, almost all of it in Imperial County. The easterly and westerly boundaries are contiguous with the westerly and easterly boundaries of the Colorado River Basin and the Anza-Borrego planning areas, respectively. Its northerly boundary is along the Salton Sea and the Coachella Valley planning area; and its southerly boundary follows the International Boundary with Mexico. The planning area's principal feature is the flat, fertile Imperial Valley. The principal communities are El Centro and Brawley.

The project area is situated just west of the New River approximately 27.5 miles south of the Salton Sea. According to watershed maps produced by the U. S. Geological Survey (USGS), the project area is contained within the Upper New River hydrologic sub-basin, which is located in the southernmost portion of the Imperial Valley Hydrologic Unit (HUC 18100200) (USGS 2014). The Imperial Valley is characterized as a closed basin and, therefore, all runoff generated within the New River Basin discharges into the Salton Sea.

### 2.2.9 Noise

The predominant sources of noise in the project area is from vehicular traffic on local roads and highways and agricultural operations. Activities involving the use of heavy-duty equipment such as front-end loaders, forklifts, and diesel-powered trucks are common noise sources typically associated with agricultural uses. Noise typically associated with agricultural operations, including the use of heavy-duty equipment, can reach maximum levels of approximately 85 A-weighted decibel (dBA) at 50 feet (Caltrans 1998). With the soft surfaces characterizing the agricultural landscape, these noise levels attenuate to approximately 60 dBA at distances over 800 feet.

Based on field observations of the project area, the existing noise environment is generally influenced by the noise produced from the following sources:

- Vehicle traffic along major roadways including Ferrell Road, George Road, Rockwood Road, Kubler Road, and SR-98;
- Crop dusting operations based out of Johnson Brothers Private Airstrip; and
- Agricultural operations throughout the project study areas including the operation of heavy equipment and vehicles.

### 2.2.10 Public Services

Because the project area is generally comprised of agricultural land, the need for public services is limited. The project sites are located on private land within the Imperial County Fire Department and Office of Emergency Services (ICFD/OES) area of service. There are no parks or libraries in the vicinity of the project area.

### 2.2.11 Transportation/Traffic

The following street segments are located within the project area: SR-98, Kubler Road, Brockman Road (S 30), Rockwood Road, George Road, Corda Road, La Brucherie Road, Ferrell Road, and Weed Road. As discussed further in Section 4.13 Transportation/Traffic, roads within proximity to the project area are currently operating at an acceptable level of service (LOS).

### 2.2.12 Utilities/Service Systems

Water is conveyed to the solar field portions of the project area via the IID canals. The project area is used for agricultural purposes. Only four residential units are located within the project sites. As a result, there are no wastewater facilities located on any of the four project sites. Current drainage systems consist primarily of earthen open channels paralleling irrigation canals on the downstream side of the fields. The drains collect excess surface flows from the agricultural fields (tailwater), subsurface flows from a system of tile drains underlying the fields (tilewater), and operational spill from the canals and laterals. IID also provides electricity to the private land portion of the project area.

### 2.3 EXISTING LAND USE

The project area is located on agricultural lands and zoned General Agriculture (A-2), General Agriculture Rural (A-2-R), and Heavy Agriculture Rural (A-3) which are areas designated for agricultural uses and promote compatible uses. To the east of the solar field portions of the project study areas is the Calexico Urban Area, which is approximately 8,302 acres surrounding the incorporated City of Calexico. Because urban areas typically will be annexed or incorporated, they typically provide a full range of public infrastructure normally associated with cities (Imperial County General Plan, as amended through 2008). There are 13 residences scattered throughout the project study area, which support farming activities. Nine of these residences are located off-site, and four are located on the project site. A private airstrip is located southeast of the ISF.

The four project sites are located adjacent to three solar farms including the previously approved Mount Signal and Calexico Solar Farm Projects, and the proposed Wistaria Ranch Solar Farm. The project study areas border the Calexico II-B and Wistaria Ranch Solar Farms on three sides. Additionally, the off-site transmission is generally located within private lands, within the boundaries of previously approved solar projects.