5.5 WATER RESOURCES

This section of the Application for Certification (AFC) summarizes the potential environmental effects on water resources that could result from construction of the SES Solar Two, LLC (Solar Two or Applicant) Project. The Project consists of approximately 30,000 SunCatcher solar electric generating systems, with a combined capacity of up to 750 megawatts (MW) to be constructed in two phases.

The Project Site consists of approximately 6,500 acres generally located east of Ocotillo Wells and west of El Centro, between Interstate 8 on the south, the Evan Hewes Highway on the north, and Dunaway Road on the east. The Project Site is situated near Plaster City, Imperial County, California. More detailed information regarding the Project Site and associated land sections can be found in Section 5.9, Land Use.

5.5.1 Affected Environment

This section describes the existing environment for water resources in the vicinity of the Project Site.

5.5.1.1 Hydrologic Setting

The Project Site lies within the Yuha Desert, which is a subregion of the Sonoran Desert. The Sonoran Desert straddles part of the United States (U.S.)-Mexico border and covers large parts of the U.S. states of Arizona and California and the Mexican state of Sonora. It is one of the largest and hottest deserts in North America.

The Yuha Desert, including the Project Site is located within the southeastern part of the Colorado Desert Hydrologic Region, which covers approximately 1,870 square miles in Southern California. More specifically, the Project Site lies within the Brawley Hydrologic Area and predominately overlays the Coyote Wells Valley Groundwater Basin, with portions of the site in the Imperial Valley Groundwater Basin (see Figure 5.5-1, Hydrologic Areas, and Figure 5.5-2, Groundwater Basins). To the north, the basins are bounded by the Salton Sea, which is the ultimate discharge point for surface water and groundwater in the basins. The average annual precipitation at the site is approximately 3 inches.

The Project Site is located on a gently sloping alluvial surface. On the west side of the site, slopes vary from about 2 percent to 5 percent and exhibit the characteristics of an alluvial pediment. Local slopes are much greater, and the terrain varies from level to steep hills and valleys. The east side of the site is much flatter and slopes vary from 0.5 to 1.0 percent. This part of the site exhibits the characteristics of an alluvial plain or Bajada (Stantec 2008).

5.5.1.2 Groundwater Quality and Supply

Coyote Wells Valley Groundwater Basin

The Project Site lies predominately within the Coyote Wells Valley Groundwater Basin. The basin is approximately 100 square miles and is bounded on the north by impermeable meta-sedimentary rocks of the Coyote Mountains and by the Elsinore fault zone. Impermeable rocks

of the Jacumba Mountains bound the basin on the west and southwest. The U.S.-Mexico border forms the southeastern boundary. The eastern boundary is a roughly north-south line from Superstition Mountain through the Yuha Buttes to the international border. A surface drainage divide connecting the Coyote Mountains with Superstition Mountain forms part of the northeastern boundary. Palm Canyon Wash and Coyote Wash provide the main surface drainages for the basin (DWR 1973; Skrivan 1977).

Holocene and Pleistocene alluvial deposits form the main water bearing units found in the basin. The Pleistocene sediments are in part overlain by Holocene alluvium in the lower part of the Coyote Wash drainage system. Well logs indicate unconsolidated sediment reaching 650 feet thick. Water bearing zones are most productive in the Holocene alluvium from 100 to 300 feet below ground surface (DWR 1973). California Department of Water Resources (DWR) Bulletin 118 does not provide typical well yields for this basin.

The principal recharge is derived from percolation of precipitation on the valley and ephemeral runoff from the surrounding mountains (Skrivan 1977) through many of the larger washes (DWR 1973). Also, infiltration basins near Plaster City were being used in 1976 to add to groundwater recharge (Skrivan 1977).

Before 1973, groundwater levels were declining because pumping exceeded the low natural recharge (DWR 1973). Groundwater flows generally southeastward through the basin (Skrivan 1977). Groundwater storage capacity was estimated to be 1.7 million acre feet (DWR 1975) and groundwater in storage was calculated to be about 1.0 million acre feet in 1973 (DWR 1973). A recent water budget for this basin is not available. However, Skrivan (1977) produced a groundwater budget for 1975. Skrivan estimated that infiltration of precipitation supplies an average of 2,600 acre feet/year of recharge to the basin. Pumping was estimated at about 900 acre feet and evapotranspiration was estimated at 300 acre feet for 1975 (Skrivan 1977). Groundwater loss by underflow was estimated at 1,450 acre feet to Mexico and 450 acre feet to the Imperial Valley Groundwater Basin for 1975 (Skrivan 1977). Using these values, Skrivan (1977) calculated that the Coyote Wells Groundwater Basin was in deficit of approximately 500 acre feet in 1975. DWR (1975) estimated natural runoff for the basin to be 300 acre feet/year.

Unconfined shallow groundwater exists in parts of the basin, but the quality of the water is poor. Well logs indicate confined groundwater conditions for several wells drilled near Ocotillo and Coyote Wells (DWR 1973). The dominant groundwater type for the productive parts of the basin is sodium bicarbonate-chloride (DWR 1973). Total dissolved solids (TDS) content ranges from 750 to 1,240 milligrams per liter (mg/L) in shallow wells to 300 to 450 mg/L in deeper wells (DWR 1973). Electrical conductance values for sampled wells range from 500 to 600 µmhos. Fluoride levels in some wells are as high as 3.5 mg/L and may be related to pre-Quaternary sedimentary deposits or from thermal water (85 to 90 degrees Fahrenheit) associated with an extension of the Elsinore fault zone or both (DWR 1967; 1973).

Imperial Valley Groundwater Basin

The extreme eastern portion of the Project lies within the Imperial Valley Groundwater Basin, which is bounded on the east by the Sand Hills and on the west by the impermeable rocks of the Fish Creek and Coyote Mountains. To the north the basin is bounded by the Salton Sea, which is the discharge point for groundwater in the basin. The physical groundwater basin extends across

the border into Baja California, where it underlies a contiguous part of the Mexicali Valley (CDPW 1954). However, for the purposes of this analysis, the southern boundary of the Imperial Valley basin is defined politically, as the international border with the Republic of Mexico. Major hydrologic features include the New and Alamo Rivers, which flow north toward the Salton Sea. The rivers were formed in the mid to late 1800s, when the Colorado River occasionally escaped its normal channel and flowed northward towards the present day Salton Sea (Setmire 1979). The All-American Canal (three branches) and the Coachella Canal also cross over the basin (DWR 2004b).

The basin has two major aquifers, separated at depth by a semi-permeable aquitard that averages 60 feet thick and reaches a maximum thickness of 280 feet. The aquifers consist mostly of alluvial deposits of late Tertiary and Quaternary age. Average thickness of the upper aquifer is 200 feet with a maximum thickness of 450 feet. The lower aquifer averages 380 feet thick with a maximum thickness of 1,500 feet. As much as 80 feet of fine-grained, low-permeability prehistoric lake deposits have accumulated on the nearly flat valley floor and cause locally confined aquifer conditions (Montgomery Watson 1995).

The San Andreas, Algodones, and Imperial faults are present within the basin, but data on whether these faults control groundwater movement is lacking. The only known barriers to groundwater flow are the lake deposits of clay that obstruct downward seepage of surface waters in the central and western part of the basin (Loeltz et al. 1975).

Recharge is primarily from irrigation return. Other recharge sources are deep percolation of rainfall and surface runoff, underflow into the basin, and seepage from unlined canals that traverse the valley (CDPW 1954). Principal areas of recharge from surface runoff are in the East Mesa and West Mesa, where the surface deposits are more permeable than in the Central Valley (Loeltz et al. 1975). Primary underflow into the basin is from Mexicali Valley to the south and through the alluvial section between the Cargo Muchacho Mountains and Pilot Knob (DWR 2004b).

Total seepage from the All-American Canal from 1942 to 1982 is estimated at 2.2 million acre feet. Seepage from the Coachella Canal between the same years is estimated at 1.2 million acre feet. However, in 1980, a 49-mile long southern portion of the Coachella Canal was lined, which has decreased the amount of recharge from this source (Montgomery Watson 1995). Another source of groundwater recharge occurs along the lower reaches of the New River, near Calexico (Montgomery Watson 1995).

Groundwater within the basin generally flows toward the axis of the valley and then northwestward toward the Salton Sea (Montgomery Watson 1995). Water levels vary widely within the basin due to differing hydraulic heads and the localized confining clay beds in the area (Brown 1923). Groundwater levels remained stable within the majority of the basin from 1970 to 1990 because of relatively constant recharge and an extensive network of subsurface drains (Montgomery Watson 1995).

The basin may have saturated sedimentary deposits as thick as 20,000 feet. A large portion of this groundwater is undesirable because of high TDS concentrations (Montgomery Watson 1995). The total storage capacity for this basin is estimated to be 14.0 million acre feet (DWR 1975). Groundwater storage values for the basin are not available.

Montgomery Watson (1995) published a groundwater model utilizing data from 1970 to 1990. Based on this model, recharge comes mostly from imported sources and canal seepage and totals approximately 250,000 acre feet/year. Losses to streams average 169,342 acre feet/year. Groundwater discharge from the basin averages 270,000 acre feet/year, and subsurface inflow averages 173, 000 acre feet/year. Thus, the average change in groundwater storage is approximately 16,000 acre feet/year.

Water quality varies extensively throughout the basin. TDS content ranges from 498 to 7,280 mg/L in the basin (Loeltz et al. 1975). California Department of Health Services data from five public supply wells show an average TDS concentration of 712 mg/L and a range from 662 to 817 mg/L. In general, groundwater beneath the basin is unusable for domestic and irrigation purposes without treatment. TDS values typically exceeding 2,000 mg/L are reported from a limited number of test wells drilled in the western part of the basin. Groundwater in areas of the basin has higher-than-recommended levels of fluoride and boron (Loeltz et al. 1975).

Approximately 7,000 acre feet/year of groundwater is estimated to recharge the basin from the New River, which drains the Mexicali Valley (Montgomery Watson 1995). This groundwater is related to surface flow from the highly polluted New River and negatively affects groundwater quality in the basin (Setmire 1979).

5.5.1.3 Surface Water Quality

No perennial streams exist within the Project Site. The nearest perennial stream is the New River, which is approximately 8 miles east of the eastern end of the site and does not pose a flooding hazard to the Project. The site is traversed by a number of ephemeral washes. These are normally dry streambeds, but may flow after significant rainfall. Washes fill up quickly during rains and there may be a sudden torrent of water after a thunderstorm begins upstream (Stantec 2008).

No known drainages with beneficial uses listed within the Colorado River Basin Regional Water Quality Control Board (RWQCB) occur within the Project Site. As described above, Project surface water that does not infiltrate or evaporate ultimately drains approximately 30 miles north to the Salton Sea, which is listed for impairments that include nutrients, salinity, and selenium.

5.5.1.4 Climate and Precipitation

As mentioned above, the average annual precipitation is approximately 3 inches in the area of the Project Site. The Project Site is approximately 14 miles west of the City of El Centro, which has an arid climate and is the southernmost desert city in the United States with an elevation below sea level. El Centro has over 350 days of sunshine and under 3 inches (76 millimeters) of rain annually. Winter temperatures are in the mid 70s (degrees Fahrenheit) to mid-80s with overnight lows in the mid 40s to low 50s. During summer days, the dry, desert heat can push temperatures well into the 100s, and the nights stay in the low 80s to mid 70s. Table 5.5-1, Average Temperatures and Precipitation in Imperial County (1971-2000), illustrates the average temperatures and precipitation for the area. Average annual humidity is 24 percent. Average annual pan evaporation is over 140 inches.

Table 5.5-1
Average Temperatures and Precipitation in Imperial County (1971-2000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average Maximum Temperature (°F)	70.2	74.5	79.3	86.1	94.0	103.4	107.0	105.7	101.1	90.9	78.1	69.7	88.3
Average Minimum Temperature (°F)	41.3	44.9	48.7	53.5	60.6	68.4	75.8	76.6	70.6	59.2	47.3	40.5	57.3
Precipitation (inches)	0.51	0.36	0.31	0.05	0.03	0.01	0.06	0.32	0.36	0.35	0.17	0.43	2.96

Source: WRCC, 2008.
Note:
°F = degrees Fahrenheit

5.5.1.5 Water Supply and Use

According to the Colorado River Basin RWQCB, the Colorado River, whose water is imported via the All-American Canal, is the predominant water supply and is used for irrigation, industrial, and domestic purposes in the Imperial Valley. In general, groundwater beneath the basin is unusable for domestic and irrigation purposes without treatment. TDS values typically exceeding 2,000 mg/L are reported from a limited number of test wells drilled in the western part of the basin. Groundwater in areas of the basin has higher-than-recommended levels of fluoride and boron. TDS values of water from the Imperial Irrigation District (IID) Westside Main Canal, approximately 3.5 miles from the eastern boundary of the site, are on the order of 800 mg/L (DWR 2004b).

5.5.1.6 Wastewater Streams

No known sources of wastewater streams occur on the Project Site or are adjacent to the site so that they would drain through the site.

5.5.1.7 Storm Water Runoff

The geomorphic surfaces of this portion of the Imperial Valley are characterized by gently sloped topography typical of the county terrain. The ground surface at the Project Site slopes northeast from an approximate high point elevation of 300 feet above mean sea level to the eastern side of the site with an elevation at sea level. The western portion of the site west of the San Diego Gas & Electric transmission line is characterized by rolling terrain with well-defined washes. East of the San Diego Gas & Electric transmission line, the terrain is described as having uniform and gentle slopes (Stantec 2008).

Several unnamed U.S. Geological Survey designated “blueline” streams traverse the Project Site. These blueline streams are ephemeral which is defined as a stream or part of a stream that flows only in direct response to precipitation. A blueline stream receives little or no water from springs, melting snow, or other sources; its channel is at all times above the water table (USGS 2008). These ephemeral streams are also referred to as dry washes throughout this section.

Appendix E, Preliminary Geotechnical and Geologic Hazards Evaluation, illustrates the general drainage system in and surrounding the Project area. In general, drainage in the area flows north to northeast. As shown, several significant basins south of Interstate 8 generally drain northeasterly, under Interstate 8 and continue through the Project Site. From these basins, off-site flows collect in roadside ditches along the south side of the interstate and are directed through culverts, which pass the flow under the interstate embankment. A number of well-defined washes cross the site. Several of these convey the larger off-site flows flowing through the culverts at Interstate 8. Others are smaller and convey on-site runoff. These eventually join with the larger washes. Several areas of the site also exhibit sheet flow conditions in areas where well-defined natural channels do not exist. Flooding conditions on the site are likely during short duration, intense thunderstorms. Given the small area of the on-site watershed in comparison with the much larger off-site watershed, on-site flow peaks may pass before the off-site flows reach the site. Since thunderstorms typically cover small aerial extents, it is possible that localized flooding may be experienced in parts of the site while other parts remain unaffected. Most runoff crossing the site flows generally north and east, eventually reaching the railroad tracks or exiting the eastern Project boundary. Flows in the westernmost basins exit the Project area by continuing to flow north through existing railroad trestles. In central basins, flows reaching the railroad tracks will follow existing drainage east along the railroad until exiting the eastern site boundary (Stantec 2008).

The Initial Drainage Report (see Appendix N, Initial Drainage Report) describes and delineates the on-site and off-site basins in more detail and tabulates calculated flow rates for the basins. Surface runoff for individual watershed basins ranges from 307 cubic feet per second to 3,689 cubic feet per second for the 100-year storm event, varying with the size of the watershed basin (Stantec 2008).

5.5.1.8 Flooding Hazards

The Project is within the Federal Emergency Management Agency's (FEMA's) Flood Insurance Rate Map (FIRM) Community Panel Numbers 0600650775B, effective date of 15 March 1984; 0600650975B, effective date of 15 March 1984; and 0600650935B, effective date of 15 March 1984. The FIRMs illustrate that most of the Project Site is located within Zone C, but contains limited areas designated as Zone A. The FIRM panel defines Zone A as, "Areas of 100-year flood; base flood elevations and flood hazard factors not determined," and Zone C is defined as, "Areas of minimal flooding." See Figure 5.5-3, FEMA 100-Year Flood Zone, for the FEMA Zone A floodplain delineations.

Appendix N, Initial Drainage Report (Stantec 2008) describes methods to characterize and delineate additional dry wash locations and approximate flooding limits. Appendix E, Preliminary Geotechnical and Geologic Hazards Evaluation, shows additional dry wash locations and approximate flooding limits.

5.5.2 Environmental Consequences

This section provides details on water quality, the proposed water supply and use, wastewater discharge, and storm water runoff and flooding hazards.

5.5.2.1 Surface Water and Groundwater Quality

The All-American Canal is the predominant water supply in Imperial County and is used for irrigation, industrial, and domestic purposes for the Imperial Valley. The All-American Canal is the source for three other canals: East Highline, Central Main, and Westside Main. The Project proposes to use water from the Westside Main Canal through agreement with IID. Table 5.5-2, Raw Water Quality Analysis, shows the water quality analysis done for Westside Main Canal on two separate dates. The water quality analyses for the other canals (East, Central, and All-American) are provided in Appendix X, IID Water Quality Analysis – General Mineral and Physical and Inorganic Analysis.

Table 5.5-2, Raw Water Quality Analysis, includes the data from IID Westside Main Canal water quality reports.

Table 5.5-2
Raw Water Quality Analysis

Characteristics	Units	10/23/05 Value	11/13/07 Value
General			
Turbidity	NTU	0.1	2.6
Conductance	µmhos/cm	10	1200
Total Dissolved Solids	ppm	810	800
Total Hardness	ppm	360	360
Total Alkalinity	mg/l $CaCO_3$	160	160
Cations			
Calcium	mg/l	91	95
Magnesium	mg/l	33	32
Sodium	mg/l	120	120
Potassium	mg/l	4.7	5.4
Anions			
Bicarbonate	mg/l	190	200
Sulfate	ppm	330	320
Chloride	ppm	120	130
Fluoride	ppm	0.29	0.36
Trace Elements			
Arsenic	µg/l	2.4	ND
Beryllium	µg/l	ND	ND
Cadmium	µg/l	ND	ND
Cobalt	µg/l	NT	NT
Chromium	µg/l	ND	ND
Copper	µg/l	ND	ND
Iron	µg/l	510	160
Lithium	µg/l	NT	NT

Table 5.5-2
Raw Water Quality Analysis

Characteristics	Units	10/23/05 Value	11/13/07 Value
Manganese	µg/l	33	20
Nickel	µg/l	ND	ND
Lead	µg/l	ND	ND
Selenium	µg/l	ND	ND
Silver	µg/l	ND	ND
Zinc	µg/l	ND	ND
Organics			
Total Trihalomethanes	ppb	NT	ND

Source: IID, 2007a and 2007b.
Notes:
$CaCO_3$ = calcium carbonate
cm = centimeter
mg/l = milligram per liter
µmhos = micromhos
µg/l = microgram per liter
ND = not detected
NT = not tested
NTU = nephelometric turbidity units
ppm = parts per million
ppb = parts per billion

The levels of fluoride and boron in the groundwater at the Project Site are higher than recommended for the basin.

5.5.2.2 Water Supply and Use

Potential water supply sources evaluated for the Project included reclaimed water, surface water, groundwater, and obtaining water from a service provider.

Reclaimed water was not considered a viable option due to the lack of economically feasible supply source from wastewater treatment plant facilities in the area. The closest wastewater treatment plant facility is located in El Centro at 2255 La Brucherie Road, El Centro, California 92253, approximately 16 miles from the Project Site. The plant capacity is approximately 8 million gallons per day; however, the maximum daily treatment in 2005 was 4 million gallons per day. Because of the distance to the wastewater treatment plant facility, the water would be required to be either piped or trucked in via approximately seven 5,000 gallon tanker trucks (to meet the average daily usage of 23.3 gallons per minute [gpm]) over a long distance and treated on-site for a variety of chemical and biological constituents not generally present in the Project Site area, which would likely offset any environmental gains from the water quality standpoint. Storm water runoff capture and storage was not considered a reliable source of water supply due to the limited amount of rainfall available for storage, the sporadic nature of rainfall in the region, and engineering and logistical issues related to providing surface water storage ponds capable of providing reliable adequate long term supply.

The final long-term potential water sources considered for the Project include groundwater from the Coyote Valley Mutual Water Company and the Ocotillo Mutual Water Company, and surface

water from IID. DWR Bulletin 118 indicates that the Coyote Wells groundwater aquifer, which the Project Site chiefly overlies is, an overdraft deficit situation. In addition, the Applicant received an email communication on 13 May 2008 from Lenn Koontz, Director, Coyote Mutual Water Company, specifically stating that they are "prohibited from selling water for any reason other than for our resident's consumption or for public safety." Therefore, the use of groundwater from the Coyote Wells groundwater aquifer was not considered further. Therefore, the preferred water supply source is from surface water canals in the area. The closest and most economical supply source is the IID Westside Main Canal. Obtaining supply water from one of the two other water service providers or Plaster City is a potential backup, if deemed necessary; however, obtaining water from these suppliers is not likely based upon their current policies. According to Lenn Koontz, Director of Coyote Valley Mutual Water Company they do not currently supply industrial water users, only residential and public safety user, Ocotillo Mutual Water Company was contacted regarding supply potential but the Applicant did not receive a response. Ocotillo Mutual Water Company may not prove to be a reliable source due to basin deficit and potential distribution issues in the area. Based upon information provided by a local water attorney and Imperial County, new groundwater use in the area is not available without extensive legal efforts. Another potential interim backup supply for water is water truck supply to the project (32.7 acre feet/year). This would be equivalent to approximately seven 5,000 gallon water trucks per day based upon the average daily use of 23.3 gpm for 30,000 dishes. However, this option is only considered a short-time supply option if the main supply source is interrupted. The source of water for trucking would be the same as that for the IID water supply, the Colorado River.

Proposed Water Supply Source

Based upon the water supply research summarized above, the Applicant intends to secure a water supply agreement with IID for use of Westside Main Canal water. IID is in negotiations with Solar Two to issue a water letter to supply the Project with water for the duration of the Project (see Appendix U, Imperial Irrigation District Water Letter). Portions of the site are within IID's service area. IID has indicated that the portions of the site that are not within its service area must be annexed by IID. Water from the IID Westside Main Canal will be conveyed to the site via a new pump station and pipeline from the canal along the Union Pacific Railroad right-of-way.

The water from the IID Westside Main Canal is characterized as raw water, and will require treatment to remove dissolved solids for SunCatcher mirror wash water applications and additional treatment to meet standard drinking water quality requirements. The water will be required to be demineralized to prevent mineral deposits forming on the SunCatcher mirrors. Processes available for demineralization are Reverse Osmosis (RO) and ion exchange. The Project will use an RO treatment unit. Appendix J, Water Balance Flow Diagrams, show the water mass balance diagram and a water supply schematic.

Potable water, raw water treatment, and SunCatcher mirror washing under regular maintenance routines will require approximately 23.3 gpm of raw water per day with a maximum requirement of approximately 39.2 gpm of raw water per day during the months each year when each SunCatcher receives a single mechanical wash. Table 5.5-3, Operations Water Usage Rates, summarizes the water usage rates.

Table 5.5-3
Operations Water Usage Rates

Water Use	Daily Average (gallons per minute)	Daily Maximum (gallons per minute)	Annual Usage (acre feet)
Equipment Water Requirements			
SunCatcher Mirror Washing	10.4[1]	17.4[2]	14.2[3]
Water Treatment System Discharge			
Brine to Evaporation Ponds	5.5	10.2[4]	7.5
Potable Water Use			
For drinking and sanitary water requirements	3.9[5]	4.7[6]	5.4[7]
Dust Control			
Raw water for dust control during operations	3.5[8]	6.9[9]	5.6[10]
Totals	**23.3**	**39.2**	**32.7**

Source: SES Solar Two, LLC, 2008.

[1] Based on 30,000 SunCatchers requiring a monthly wash with an average of 14 gallons of demineralized water per spray wash and a five-day work week (21 work days per month).

[2] During a three month period, all SunCatcher mirrors are given a scrub wash requiring up to three times the normal wash of 14 gallons per SunCatcher. Therefore, the Daily Maximum usage rate is based on 2/3 of the SunCatchers receiving a normal wash and one third receiving a scrub wash.

[3] Based on every SunCatcher having approximately 8 normal washes per year with one additional scrub wash.

[4] Based on the maximum amount of demineralized water required for mirror washing and assumes a decrease in raw water quality requiring an additional 20 percent of system discharge.

[5] Assumes 30 gallons per person per day for 188 people.

[6] Maximum amount assumes a 20 percent contingency over the Daily Average.

[7] Assumes a six-day work week and average daily usage.

[8] Assumes 5,000 gallons per day.

[9] Assumes up to 10,000 gallons per day.

[10] Assumes daily average dust control operations.

Water for domestic use will meet the standards adopted by the Environmental Protection Agency. Bottled water may be considered for drinking water in place of a potable water treatment system.

Water Use Comparison

Table 5.5-4, Comparison of Water Usage Rates, provides estimates of typical water use for other land uses in the area as well as water use data for other types of power generating facilities. The table provides typical water use per acre for other land uses and water use per MW of power generation for other types of generating facilities. The water usage rates shown in the table indicate the Project will require significantly less water than other power generating facilities as well as other land use types. Therefore, the proposed water use is anticipated to be a less than significant effect on water resources in the area.

As a comparison, data from an Application for Certification for a proposed 750 MW combined-cycle generating facility states a requirement of a total 5,400 acre feet water per year at an annual average of 3,300 gallons per minute (gpm) at a 99 percent capacity factor. This facility will require this volume of water for equipment makeup, including makeup to the cooling tower, the

combustion turbine inlet air evaporative cooler, and the heat recovery steam generator, along with potable water makeup for sanitary uses and plant utility stations. Solar Two's water needs are several orders of magnitude less than this for this comparable traditional energy generation facility.

Table 5.5-4
Comparison of Water Usage Rates

Activity/Property Use	Water Use
Power Generation	
Solar Two (32.7 afy with 750 MW)	0.044 afy/MW
Solar Thermal, Dry Cooling (Carrizo Energy Solar Farm Compact Linear Fresnal Reflector- Not Yet Constructed)[a]	0.12 afy/MW
Solar Concentrating Thermal Power (Ivanpah Solar Electric Generating System - Not Yet Constructed)[a]	0.25 afy/MW
Victorville 2 Solar Hybrid (Not Yet Constructed)[a]	5.6 afy/MW
Solar Thermal (Parabolic Trough), Wet Cooling[b]	6 to 13 afy/MW
Conventional Coal-fired[c]	11.2 afy/MW
Land Uses	
Solar Two (32.7 afy)	32.7 afy or 0.005 af/acre
Single Family Residential[d]	0.52 afy
Commercial/Institutional[d]	1.66 afy
Urban[e]	3.2 af/acre
Industrial[d]	6.27 afy
Agricultural	
Spinach[f]	0.5 to 2.0 af/acre
Corn[e]	2.4 af/acre
Tomatoes[e]	3.9 af/acre
Lettuce[f]	4 af/acre
Cotton[e, g]	3.2 to 5.0 af/acre
Alfalfa[e,b]	4.7 to 5.5 af/acre
Carrots[f]	5.8 af/acre

Sources:
[a] California Energy Commission, ttp://www.energy.ca.gov/sitingcases/ivanpah/index.html;
[b] National Renewable Energy Laboratory, Parabolic Trough FAQs, www.nrel.gov;
[c] A 880-MW plant reportedly uses an average of 11 million gallons per day, of which 80 percent is lost to atmosphere as steam (www.deq.virginia.gov);
[d] Integrated Water Resources Plan, MWD, Report No. 1107, March 1996, from Southern California Association of Governments and San Diego Association of Governments;
[e] California Department of Water Resources, The California Water Plan Update, Bulletin 160-98. Value appearing for San Joaquin Valley unless noted;
[f] www.vric.ucdavis.edu;
[g] "Power Plants in Arizona--an Emerging Industry, a New Water User," http://ag.arizona.edu.

Notes:
af = acre-feet
afy = acre-feet per year
MW = megawatt

5.5.2.3 Wastewater Discharge

A water treatment building will be constructed as part of the Main Services Complex. The building will contain equipment for processing and treating water required for fire protection, SunCatcher mirror washing, and potable water uses. The building will contain the water treatment system, an analytical laboratory area, a separate bulk chemical storage area for the water treatment process, and a separate electrical motor control center room.

The water treatment wastewater generated by the RO unit will contain relatively high concentrations of TDS. Wastewater or brine generated by the RO unit will be discharged to two lined evaporation ponds, double-lined impoundment, or equivalent. Each pond will be sized to contain 1 year of discharge flow (approximately 3 million gallons). A minimum of 1 year is required for the waste to undergo the evaporation process. The second pond will be placed into operation while the first is undergoing evaporation. The two ponds will alternate their functions on an annual basis.

The brine constituents in the water treatment wastewater include those from the raw water source, resulting in concentrations of up to four to five times the raw water source. The TDS anticipated in the brine when treating to less than 20 mg/L TDS is approximately 3,600 mg/L based on the source TDS level of 810 mg/L.

After the brine has gone through the evaporation process, the solids that settle at the bottom of the evaporation pond will be tested by the Applicant and disposed of in a landfill or recycled. Solids buildup in these ponds will be scheduled for removal during the summer months for maximum solids removal and will be disposed of in an appropriate manner.

Sanitary wastewater generated at the Project cannot be conveyed to an existing sewage facility. No public or private entities manage sanitary wastewater flows for locations in the vicinity of the Project Site. A local, site-specific, small wastewater treatment plant and in-ground septic system will be constructed to handle sanitary wastewater. A facility of this type will designed to meet the requirements of the local RWQCB and the Imperial County Public Health Department, and will meet operation and maintenance guidelines required by the California Department of Health Services.

SunCatcher mirror washing will be ongoing throughout the life of the project. Washing will be carried out approximately 11 times per year for each SunCatcher mirror using demineralized water, and one time per year using a dilute biodegradable soap solution. Depending on the atmospheric conditions, the heat conductivity of the mirror and the time of day, it is expected that most of the water used to clean the mirror surface will evaporate before reaching the ground surface. Any incidental wash water reaching the ground surface will evaporate quickly and the highly diluted soap solution will biodegrade. Therefore, it is not currently anticipated that any proposed detention, infiltration, or evaporation ponds will be used for process wastewater disposal. No significant effects are anticipated to soil chemistry, surface water, or groundwater quality from mirror washing.

5.5.2.4 Storm Water Runoff and Flooding Hazards

Portions of the Project Site are located in FEMA-designated special flood hazard areas. Erosion, sediment transport, and deposition all occur on the site under existing conditions. A Project-specific Drainage, Erosion, and Sediment Control Plan and Construction Storm Water Pollution Prevention Plan (SWPPP) will be completed for the Project before construction and will identify any additional required Best Management Practices (BMPs) to control sediment and erosion on the site both during and after construction. Implementation of these plans will ensure that that the Project will not significantly increase the risk of flooding, erosion, or siltation. Although minimal changes in absorption rates, drainage patterns, or the rate or amount of surface runoff will occur due to the surface paving and the presence of new structures, surface water runoff will be contained and allowed to drain naturally, evaporate, and percolate.

Any solar units within the 100-year floodplain will need to comply with all Imperial County floodplain design standards. Localized channel grading will take place on a limited basis to improve channel hydraulics and to control flow direction where buildings and roadways are proposed. The Main Services Complex will be protected from a 100-year flood by berms or channels that will direct the flow around the perimeter of the building site, if required.

Roadway dips will be used for major washes where the channel cross-section exceeds 8 feet in width and 3 feet in depth or exceeds 20 feet in width and 2 feet in depth. The roadway section at the channel flow line will be without a crown. Roadway protection will be provided by a concrete cut-off wall along the edges of the roadway with ungrouted (loose) riprap upstream and downstream of the concrete cut-off wall.

The proposed east-west on-site Paved Arterial Roadway section between the Main Services Complex and the 100-acre laydown area (with 25-acre staging area) at Dunaway Road, as well as the main access road entering from Evan Hewes Highway, will be designed as a designated evacuation route. As such, culverts will be designed such that the roadway section shall have its driving surface constructed above the projected profile of a 100-year flood event.

Building sites will be developed per Imperial County drainage criteria, with provision for a soft-bottom storm water retention basin. Rainfall from paved areas and building roofs will be collected and directed to the storm water retention basins. Volume of retention or detention basins should have a total volume capacity for a 3-inch minimum precipitation covering the entire site with no reduction in runoff coefficient factors. Volume can be considered by a combination of basin size and additional volume provided within paving and/or landscaping areas.

The retention basin will be designed so that the retained flows will empty within 72 hours after the storm to provide mosquito abatement. This design can be accomplished by draining, evaporation, infiltration, or a combination thereof.

The Project will have zero liquid discharge. The post-development flow rates released from the Project Site are expected to be less than the predevelopment flow rates, thus complying with the BMPs. The expected flow reduction is based on the bulleted items below.

- Except for the Building Sites, the majority of the site will remain nearly 100 percent pervious, as only a negligible portion of the site will be impacted by pavement and SunCatcher foundations.

- The increased runoff expected from the building sites will be over-mitigated by capturing 100 percent of the runoff in a retention basin, where the storm runoff will be infiltrated and/or evaporated to the atmosphere.
- The proposed perforated risers to be constructed upstream of the roadway culverts will provide for additional detention.

5.5.3 Cumulative Effects

Cumulative effects for water resources were evaluated on a surface watershed and groundwater aquifer basis. The total watershed area of the Project is approximately 10 square miles, approximately 9 square miles of which lie within the 1,870 square mile Colorado Desert Hydrologic Region surface watershed and the Imperial Valley Groundwater Basin, with the remainder within the 100 square mile Coyote Wells Groundwater Basin. The Project occupies a relatively small proportion of the total watershed area (0.5 percent) and because on-site effects are less than significant the Project is not expected to result in significant cumulative effects to water resources during construction or operation. Additionally, the proposed water supply source is canal water from IID (not an on-site groundwater well) so there will be no effects to the groundwater aquifer levels. Furthermore, due to the relatively limited change in surface topography there will be a less than significant effect on surface water flooding limits and duration in the area.

In relation to other land uses and power generating facilities, the Project water use is significantly lower in comparison based upon per acre and per MW water usage rates as illustrated in Table 5.5-4, Comparison of Water Usage Rates. In terms of power generating facilities, the Project's water use rate is approximately 0.044 acre-feet per year/MW compared to approximately 0.1 acre-feet per year/MW for the next most efficient solar electric generating technology (solar thermal compact linear fresnal reflector system), and 11 acre-feet per year/MW for a conventional coal fired power generating facility. In terms of land use, the Project's water use rate is approximately 0.005 acre-feet per year per acre (32.7 acre-feet per year over 6,500 acres) compared to average uses of 0.52 acre-feet per year per year for single family residential, and 1.55 acre-feet per year for general industrial/commercial operations (UCR 2000). Based upon the projected annual water usage rate per acre it is not anticipated that the Project will significantly increase cumulative effects to water use within Imperial Valley. In addition, the Project Site would be designed to minimize effects on erosion and sedimentation below the Project Site and would therefore not be expected to have cumulative effects on the watershed when considered together with other foreseeable potential projects.

5.5.4 Mitigation Measures

Mitigation measures for water resources will be applied in situations where the Project has or would have an unmitigated significant effect. As discussed above, the evaluation of water resources effects considers both the occurrence and the quality of water in the area. For the occurrence of groundwater in the area, the Project will have no significant effect on the depth to water in the aquifer or groundwater quality because the Project will not utilize a groundwater well for supply. Furthermore, after implementation of the Project water resources features

described in Section 5.5.2, Environmental Consequences, the Project will not have a significant effect on water quality in the area or surface water runoff flowrates, volumes, or floodplain effects. Thus, no mitigation is required for water resources.

5.5.5 Compliance with LORS

The construction and operation of the Project will be conducted in accordance with all federal, state, county and local laws, ordinances, regulations, and standards (LORS) applicable to water resources.

5.5.5.1 Federal

Clean Water Act of 1977 (including 1987 amendments) Section 402; 33 United States Code Section 1342; 40 Code of Federal Regulations Parts 122–136

The Clean Water Act (CWA) requires a National Pollutant Discharge Elimination System (NPDES) permit for any discharge of pollutants from a point source to Waters of the U.S. This law and its regulations apply to storm water and other discharges into Waters of the U.S. The CWA requires compliance with a general construction activities permit for the discharge of storm water from construction sites disturbing 0.5 acre or more. This federal permit requirement is administered by the State Water Resources Control Board (SWRCB).

Construction activities at the Project Site will be performed in accordance with a SWPPP and associated monitoring plan that is required in accordance with the NPDES General Permit for Storm Water Discharges Associated with Construction Activities, which is issued by the SWRCB. The SWPPP will provide control measures, including BMPs to reduce erosion and sedimentation as well as other pollutants associated with vehicle maintenance, material storage and handling, and other activities occurring at the Project Site. The administering agencies for the above authority are the SWRCB and the Colorado River Basin RWQCB.

Clean Water Act Section 311; 33 United States Code Section 1342; 40 Code of Federal Regulations Parts 122–136

This portion of the CWA requires the reporting of any prohibited discharge of oil or hazardous substance. The Project will conform by proper management of oils and hazardous materials, both during construction and operation phases. The administering agency is the Colorado River Basin RWQCB and the California Department of Toxic Substances Control.

Title 40 Code of Federal Regulations Parts 124, 144 to 147

This portion of the Code of Federal Regulations (CFR) requires protection of underground water resources. The Project will comply with this requirement through the use of a lined evaporation pond for RO discharge water.

5.5.5.2 State

California Water Code Section 13552.6

This portion of the California Water Code relates to the use of potable domestic water for cooling towers, air conditioning devices, and floor trap priming. No cooling towers are proposed as part of the Project.

State Water Resources Control Board, Resolution 75-58 (June 18, 1975)

The SWRCB prescribes state water policy on the use and disposal of inland water used for power plant cooling. No cooling towers are proposed as part of the Project.

California Porter-Cologne Water Quality Control Act 1998; California Water Code Section 13000–14957; Division 7, Water Quality

The Porter-Cologne Water Quality Control Act authorizes the state to develop and implement a statewide program for the control of the quality of all waters of the state. The Act establishes the SWRCB and the nine RWQCBs as the principal state agencies with primary responsibility for the coordination and control of water quality. Under § 13172, siting, operation, and closure of waste disposal sites are regulated. The SWRCB requires classification of the waste and the disposal site. Discharges of waste must comply with the groundwater protection and monitoring requirements of the Resource Conservation and Recovery Act of 1976, as amended (42 United States Code [USC] Sec. 6901 *et seq.),* and any federal acts that amend or supplement the Resource Conservation and Recovery Act of 1976, together with any more stringent requirements necessary to implement this revision or Article 9.5 (commencing with Section 25208) of Chapter 6.5 of Division 20 of the Health and Safety Code. Project will comply with the regulations set forth in this Act.

The administering agencies for the above authority are the California Energy Commission (CEC), SWRCB, and the Colorado River Basin RWQCB.

Title 22, CCR Division 4, Chapter 3

This regulation requires maximum use of reclaimed water in the satisfaction of requirements for beneficial uses of water. The Project satisfies this requirement in that it complies with the Colorado River Basin RWQCB Water Quality Control Plan (2006). The administering agency is the Colorado River Basin RWQCB.

California Water Code, Section 5002

This requirement relates to the extraction of groundwater and requires that a Notice of Extraction and Diversion of Water be filed with the SWRCB. This requirement applies for extractions greater than 25 acre feet/year. The administering agency is the Colorado River Basin RWQCB. The Project will not require a groundwater well.

California Water Code, Section 13751

This is a requirement for a Report of Well Completion to be filed with the Colorado River Basin RWQCB within 60 days of well completion. No wells are proposed for the Project, however, if at any time it is determined the Project requires a well, reports will be filed.

California Public Resources Code Section 25523(a); 20 CCR Sections 1752, 1752.5, 2300-2309 and Chapter 2 Subchapter 5 Article 1, Appendix B, Part (1)

The code provides for the inclusion of requirements in the CEC's decision on an AFC to ensure protection of environmental quality and require submission of information to the CEC concerning proposed water resources and water quality protection. The administering agency for the above authority is the CEC.

California Water Code Sections 13271–13272; 23 California Code of Regulations Sections 2250–2260

These code sections require reporting of releases of specified reportable quantities of hazardous substances or sewage (Section 13272), when the release is into, or where it will likely discharge into, waters of the state. For releases into or threatening surface waters, a "hazardous substance" and its reportable quantities are those specified at 40 CFR 116.5, pursuant to Section 311(b)(2) of the CWA (33 USC 1321(b)(2)). For releases into or threatening groundwater, a "hazardous substance" and its reportable quantities are those specified at 40 CFR 116.5, pursuant to Section 311(b)(2) of the CWA (33 USC 1321(b)(2)). For releases into or threatening groundwater, a "hazardous substance" is any material listed as hazardous pursuant to the California Hazardous Waste Control Act, Health and Safety Code, Sections 25100–2520.24, and the reportable quantities are those specified at 40 CFR Part 302. Although such releases are not anticipated, the Project would comply with the reporting requirements.

The administering agencies for the above authority are the Colorado River Basin RWQCB and the California Office of Emergency Services.

California Water Code Sections 13260–13269; 23 California Code of Regulations Chapter 9

The code requires the filing of a Waste Discharge Requirements (WDR) and provides for the issuance of WDRs with respect to the discharge of any waste that can affect the quality of the waters of the state. The WDRs will serve to enforce the relevant water quality protection objectives of the Imperial Valley Region Basin Plan and federal technology-based effluent standards applicable to Project. With respect to potential water pollution from construction activities, the WDRs may incorporate requirements based on the CWA § 402(p) and implementing regulations at 40 CFR Parts 122 *et seq.,* as administered by the Colorado River Basin RWQCB. The administering agency for the above authority is the Colorado River Basin RWQCB.

California Environmental Quality Act, Public Resources Code Section 21000 et seq.; California Environmental Quality Act Guidelines, 14 California Code of Regulations Section 15000 et seq.; Appendix G

Appendix G of the California Environmental Quality Act Guidelines contain definitions of projects that can be considered to cause significant unmitigated effects to water resources. The Project is not expected to cause significant effects to water resources, as described in Section 5.5.2, Environmental Consequences. The administering agency of the above authority is the CEC.

Title 27, California Code of Regulations Division 2. Section 20375. State Water Resources Control Board – Special Requirements for Surface Impoundments. (C15: Section 2548)

This regulation governs the design requirements for surface impoundments. The evaporation pond for wastewater disposal will be designed and operated in accordance with the requirements of this section.

California Energy Commission Water Use Policy

The CEC follows statewide water use policy regulations identified in the preceding subsections.

The report titled "California's Water - Energy Relationship," prepared in support of the "Integrated Energy Policy Report Proceeding (04-IEPR-01E)," dated November 2005, the CEC provides background information on statewide water usage and indicates that the CEC supports state water use policies.

In addition to the above document, in a memorandum dated 2 September 2003 from the CEC to the State Integrated Energy Policy Committee, CEC staff provided a summary and recommendation for how the Energy Commission should implement existing state water policy in the power plant certification cases it considers. The recommendation was based, in large part, on staff's experience and recommendations on individual power plant siting cases recently before the Energy Commission. In a document entitled, "Docket No. 02-IEP-1, Staff Comments, State Water Policy, Background and Recommendations for Implementation," CEC staff present background on state water use policies and provide recommendations for CEC implementation. The overall finding by CEC staff was that because powerplants have the potential to use substantial amounts of water for evaporative cooling, the Commission has the opportunity and the responsibility to apply state water policy to minimize the use of fresh water and promote alternative cooling technologies.

In summary, the CEC staff recommendations were:

> "...the Energy Commission should extend to cases under the Commission's jurisdiction the principle enunciated by the State Water Board regarding the use of fresh water only where alternative water supply sources and alternative cooling technologies are shown to be "environmentally undesirable" or "economically unsound." Additionally, as a way to reduce the use of fresh water and to avoid discharges in keeping with the Board's policy, the Energy Commission should promote zero-liquid discharge (ZLD) technologies unless ZLD technologies are shown to be "environmentally undesirable" or "economically unsound." To clarify the principle as it applies to cases before the Energy Commission,

the Commission could interpret "environmentally undesirable" to mean the same as having a "significant adverse environmental impact" and "economically unsound" to mean the same as "economically or otherwise infeasible."

In effect, the Energy Commission would be implementing the state's water policy by approving the use of fresh water for powerplant cooling only if the use of alternative water supply sources or alternative cooling methods would cause a significant adverse environmental impact or are economically or otherwise infeasible. If an applicant proposes to use fresh water for cooling, the applicant would have the burden of justifying the use of fresh water by demonstrating with substantial evidence that alternative water sources and alternative cooling methods either cause a significant adverse environmental impact or are economically or otherwise infeasible. In furtherance of state water policy, the Energy Commission would also expect an applicant to use ZLD technology to eliminate discharge wastewater from the proposed site unless the applicant demonstrates that ZLD technologies would cause a significant adverse environmental impact or are economically or otherwise infeasible."

5.5.5.3 Local

Imperial County Ordinance, Title 9, Sections 91605.00–91605.06

This ordinance states the provisions for flood hazard reduction based on the special flood hazard area definition (§ 91401.18). The Project will be designed by a licensed engineer and meet all floodplain design standards.

Imperial County Ordinance, Title 9, Sections 90515.00–90515.11

The Project is classified as light industrial development and as such will conform to the requirements of Section 90512.00–90512.13. These requirements include the permitted and prohibited uses within the limits of the Project as well as setbacks, height limits, distances between structures, parking, landscaping and signage.

Imperial County Air Pollution Control District, Regulation VIII, Fugitive Dust Rules

This regulation reduces fugitive dust emissions associated with track-out or carry-out of bulk materials onto paved roads, unpaved haul and access roads, unpaved roads, hauling trucks, and the handling and storage of bulk materials. The Application will prepare a Drainage, Erosion, and Sediment Control Plan and a SWPPP for the Project. The LORS applicable to water resources are summarized in Table 5.5-5, Summary of LORS – Water Resources.

Table 5.5-5
Summary of LORS – Water Resources

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
Federal Jurisdiction				
CWA §402; 33 USC §1342; 40 CFR Parts 110, 112, 116	Requires NPDES Permits for construction and industrial storm water discharges. Requires preparation of a SWPPP and Monitoring Program.	Coverage under NPDES industrial storm water permit maybe required. NOI for coverage under NPDES construction storm water permit will be filed before construction.	SWRCB and RWQCB	J. Carmona
CWA §311; 33 USC §1342; 40 CFR Parts 122-136	Requires reporting of any prohibited discharge of oil or hazardous substance.	Project will conform by proper management of oils and hazardous substances both during construction and operation. If an accidental release or unintended spill occurs it will promptly be reported.	RWQCB and DTSC	J. Carmona
CFR, Title 40, Parts 124, 144 to 147	Requires protection of underground water resources	Underground water resources will be protected due to the lined evaporation pond.	Environmental Protection Agency	
State Jurisdiction				
CWC §13552.6	Use of potable domestic water for cooling towers and air conditioning is unreasonable use if suitable recycled water is available.	Recycled water is not available in the vicinity of the Project Site. Additionally, no cooling towers are proposed.	SWRCB and RWQCB	J. Carmona
California Constitution Article 10 §2	Avoid the waste or unreasonable uses of water. Regulates methods of use and diversion of water.	Project includes appropriate water conservation measures, both during construction and operation.	SWRCB and RWQCB	J. Carmona
State Water Resources Control Board, Resolution No. 75-58	Addresses sources and use of cooling water supplies for power plants that depend on inland waters for cooling and in areas subject to general water shortages.	Recycled water is not available at the Project Site. Moreover, no cooling towers are proposed.	SWRCB and RWQCB	J. Carmona
Porter-Cologne Water Quality Act of 1972; CWC § 13000-14957, Division 7, Water Quality	Requires State and Regional Water Quality Control Boards to adopt water quality initiatives to protect state waters. Those criteria include identification of beneficial uses, narrative and numerical water quality standards.	Project will conform to applicable state water standards, both qualitative and quantitative, before and during operation. Applicable permits will be obtained from Regional Water Quality Control Board.	SWRCB and RWQCB	J. Carmona
Title 22, CCR	Addresses the use of recycled water for cooling equipment	Project has investigated the technical and economic feasibility of using reclaimed water and determined that this resource is not available.	California Department of Health Services	J. Stone
The Safe Drinking Water and Toxic Enforcement Act of 1986 (proposition 65), Health and Safety Code 25241.5 *et seq.*	Prohibits the discharge or release of chemicals known to cause cancer or reproductive toxicity into drinking water sources.	Project will conform to all state water quality standards, both qualitative and quantitative. Project will not discharge into any drinking water source. If an unintended spill occurs, reporting of spill will be prompt.	California Department of Health Services	J. Crisologo

Table 5.5-5
Summary of LORS – Water Resources

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
CWC Section 461	Encourages the conservation of water resources and the maximum reuse of wastewater, particularly in areas where water is in short supply.	Project has investigated the technical and economic feasibility of using reclaimed water and determined that it is not available.	SWRCB and RWQCB	J. Carmona
CWC Section 5002	Requires a "Notice of Extraction and Diversion of Water" to be filed with the State Water Resources Control Board on or before 1 March of the succeeding year.	Notice will be filed as required by state law.	SWRCB and RWQCB	J. Carmona
CWC Section 13751	Requires a "Report of Completion" to be filed with the State Water Resources Control Board within 60 days of well construction.	A groundwater well is not proposed.	SWRCB and RWQCB	J. Carmona
California Public Resources Code §25523(a); 20 CCR §§1752, 1752.5, 2300 – 2309, and Chapter 2 Subchapter 5, Article 1, Appendix B, Part 1	The code provides for the inclusion of requirements in the CEC's decision on an AFC to assure protection of environmental quality and requires submission of information to the CEC concerning proposed water resources and water quality protection.	Project will comply with the requirements of the CEC to assure protection of water resources.	CEC and RWQCB	
CWC §§ 13271 – 13272; 23 CCR §§2250 – 2260	Reporting of releases of reportable quantities of hazardous substances or sewage and releases of specified quantities of oil or petroleum products.	No releases of hazardous substances are anticipated; however, Project will conform to all State water quality standards, both qualitative and quantitative. If an unintended spill occurs, reporting of spill will be prompt.	SWRCB and RWQCB	J. Carmona
CWC §13260 – 13269; 23 CCR Chapter 9	Requires the filing of a Report of Waste Discharge and provides for the issuance of WDRs with respect to the discharge of any waste that can affect the quality of the waters of the state.	An ROWD will be filed for the RO Unit discharge waste. The RO Unit will be constructed and monitored in accordance with RWQCB requirements.	SWRCB and RWQCB	J. Carmona
CEQA, Public Resources Code §21000 *et seq.*; CEQA Guidelines, 14 CCR §15000 *et seq.*; Appendix G	The CEQA Guidelines (Appendix G) contain definitions of projects that can be considered to cause significant effects to water resources.	Project will comply with the requirements of the CEC to assure protection of water resources.	CEC	
Title 27, CCR Division 2, §20375, SWRCB – Special Requirements for Surface Impoundments (C15: §2548)	This regulation governs the design requirements for surface impoundments.	The evaporation pond for wastewater disposal will be designed and operated in accordance with the requirements of this section.	SWRCB and RWQCB	J. Carmona

Table 5.5-5
Summary of LORS – Water Resources

LORS	Requirements	Conformance Section	Administering Agency	Agency Contact
Local Jurisdiction				
Imperial County Ordinance, Title 9, §91605.00 – 91605.06	These codes regulate flood hazard reduction.	The Project will be designed by a licensed engineer and meet all floodplain design standards.	Imperial County	P. Valenzuela
Imperial County Ordinance, Title 9, §90515.00 – 90515.11	The codes classify the Project as light industrial development and regulates its uses	The Project will conform to all code standards	Imperial County	P. Valenzuela
Imperial County APCD, Regulation VIII, Fugitive Dust Rules		The Project will conform to all code standards	Imperial County	

Source: URS Corporation, 2008.

Notes:

APCD = Air Pollution Control District
CEQA = California Environmental Quality Act
CFR = Code of Federal Regulations
CWA = Clean Water Act
CWC = California Water Code
LORS = laws, ordinances, regulations, and standards
NOI - Notice of Intent
NPDES = National Pollutant Discharge Elimination System
RWQCB = Regional Water Quality Control Board
SWRCB = State Water Resources Control Board
SWPPP = Storm Water Pollution Prevention Plan
USC = United States Code

5.5.5.4 Agencies and Agency Contacts

Agencies with jurisdiction to issue applicable permit and/or enforce LORS related to water resources are shown in Table 5.5-6, Agency Contact List for LORS.

Table 5.5-6
Agency Contact List for LORS

Agency	Contact	Title	Telephone
California Regional Water Quality Control Board, Colorado River Basin Region	John Carmona Palm Desert, CA 92260	NPDES, 401 Certification, Storm Water	760-346-7491
California Department of Health Services	Jeff Stone	Recycled Water	805-566-9767
California Department of Health Services	Joseph Crisologo	Water Security	213-580-5723
Imperial County Planning/Building Development Department	Patricia A. Valenzuela	Planner II	760-482-4320
California Department of Water Resources, Division of Planning and Local Assistance, Southern District	Tim Ross		818-500-1645

Source: Colorado River Basin RWQCB, 208; CDPH, 2008a; CDPH, 2008b.

5.5.5.5 Permits Required and Permitting Schedule

The permits required for this Project are listed in Table 5.5-7, Applicable Permits.

Table 5.5-7
Applicable Permits

Responsible Agency	Permit/Approval	Schedule
U.S. Army Corps of Engineers	Corps issues a Section 404 permit, including a nationwide permit or an individual permit for actions that result in a fill or discharge to federal jurisdictional Waters of the U.S.	Applicability and schedule to apply to be identified in Section 5.6, Biological Resources.
Colorado River Basin RWQCB	RWQCB issues a 401 Water Quality Certification or Waiver.	Agency consultation and permit approval or waiver before construction.
SWRCB and RWQCB	NPDES Permit – Prepare Industrial SWPPP.	Complete initial Industrial SWPPP and file Notice of Intent with SWRCB 60 days before operation. Submit copy of SWPPP and Notice of Intent to CEC 30 days before operation (or letter from RWQCB exempting the Project from NPDES Industrial Permit requirements).
SWRCB and RWQCB	NPDES Permit – Prepare Construction SWPPP.	Complete initial Construction SWPPP and file Notice of Intent with SWRCB 60 days before operation. Submit copy of SWPPP and Notice of Intent to CEC 30 days before operation.
Colorado River Basin RWQCB	Application for coverage under Order No. R3-2006-0063, Waste Discharge Requirements General Permit for Discharges with Low Threat to Water Quality or issuance of site specific WDR.	Apply for WDR coverage with RWQCB during improvement plan preparation process before start of construction.

Source: Colorado River Basin RWQCB, 2008; SWRCB, 2008; United States Army Corps of Engineers, 2008.
Notes:
NPDES = National Pollutant Discharge Elimination System
RWQCB = Regional Water Quality Control Board
SWPPP = Storm Water Pollution Prevention Plan
SWRCB = State Water Resources Control Board
WDR = Waste Discharge Report

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Adequacy Issue:	Adequate		Inadequate		DATA ADEQUACY WORKSHEET		Revision No.	0	Date	
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Appendix B (g) (1)	...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.				Section 5.5					
Appendix B (g) (14) (A)	All the information required to apply for the following permits, if applicable, including:				See Below					
Appendix B (g) (14) (A) (i)	Waste Discharge Requirements; National Pollutant Discharge Elimination System Permit; and/or a Section 401 Certification or Waiver from the appropriate Regional Water Quality Control Board (RWQCB);				Section 5.5.5.5 Table 5.5-7					
Appendix B (g) (14) (A) (ii)	Construction and Industrial Waste Discharge and/or Industrial Pretreatment permits from wastewater treatment agencies;				Section 5.5.5.2					
Appendix B (g) (14) (A) (iii)	Nationwide Permits and/or Section 404 Permits from the U.S. Army Corps of Engineers; and				Section 5.5.5.5 Table 5.5-7					
Appendix B (g) (14) (A) (iv)	Underground Injection Control Permit(s) from the Environmental Protection Agency, California Division of Oil and Gas, and RWQCB.				Table 5.5-5					
Appendix B (g) (14) (B)	A detailed description of the hydrologic setting of the project. The information shall include a narrative discussion and on maps at a scale of 1:24,000 (or appropriate scale approved by staff), describing the chemical and physical characteristics of the following nearby water bodies that may be affected by the proposed project:				Section 5.5.1.1					

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Appendix B (g) (14) (B) (i)	Groundwater bodies and related geologic structures;				Section 5.5.1.2					
Appendix B (g) (14) (B) (ii)	Surface water bodies;				Section 5.5.1.3					
Appendix B (g) (14) (B) (iii)	Water inundation zones, such as the 100-year flood plain and tsunami run-up zones;				Section 5.5.1.8 Figure 5.5-3					
Appendix B (g) (14) (B) (iv)	Flood control facilities (existing and proposed); and				Section 5.5.1.7 Section 5.5.2.4					
Appendix B (g) (14) (B) (v)	Groundwater wells within 0.5 mile if the project will include pumping.				Section 5.5.2.2					
Appendix B (g) (14) (C)	A description of the water to be used and discharged by the project. This information shall include:				Section 5.5.2.2					
Appendix B (g) (14) (C) (i)	Source(s) of the primary and back-up water supplies and the rationale for their selection;				Section 5.5.2.2					
Appendix B (g) (14) (C) (ii)	The expected physical and chemical characteristics of the source and discharge water(s) including identification of both organic and inorganic constituents before and after any project-related treatment. For source waters with seasonal variation, provide seasonal ranges of the expected physical and chemical characteristics. Provide copies of background material used to create this description (e.g., laboratory analysis);				Table 5.5-2					
Appendix B (g) (14) (C) (iii)	Average and maximum daily and annual water demand and waste water discharge for both the construction and operation phases of the project;				Table 5.5-3					

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Appendix B (g) (14) (C) (iv)	A detailed description of all facilities to be used in water conveyance (from primary source to the power plant site), water treatment, and wastewater discharge. Include a water mass balance diagram;				Section 5.5.2.2					
Appendix B (g) (14) (C) (v)	For all water supplies intended for industrial uses to be provided from public or private water purveyors, a letter of intent or will-serve letter indicating that the purveyor is willing to serve the project, has adequate supplies available for the life of the project, and any conditions or restrictions under which water will be provided. In the event that a will-serve letter or letter of intent can not be provided, identify the most likely water purveyor and discuss the necessary assurances from the water purveyor to serve the project;				Section 5.5.2.2 Appendix U, Imperial Irrigation District Water Letter					
Appendix B (g) (14) (C) (vi)	For all water supplied which necessitates transfers and/or exchanges at any point, identify all parties and contracts/agreements involved, the primary source for the transfer and/or exchange water (e.g., surface water, groundwater), and provide the status of all appropriate agencies' approvals for the proposed use, environmental impact analysis on the specific transfers and/or exchanges required to obtain the proposed supplies, a copy of any agency regulations that govern the use of the water, and an explanation of how the project complies with the agency regulation(s);				Section 5.5.2.2 Appendix U, Imperial Irrigation District Water Letter					

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Appendix B (g) (14) (C) (vii)	Provide water mass balance and heat balance diagrams for both average and maximum flows that include all process and/or ancillary water supplies and wastewater streams. Highlight any water conservation measures on the diagram and the amount that they reduce water demand; and				Section 5.5.2.2 Appendix J, Water Balance Flow Diagrams					
Appendix B (g) (14) (C) (viii)	For all projects which have a discharge, provide a copy of the will-serve letter, permit or contract with the public or private entity that will be accepting the wastewater and contact storm water from the project. The letter, permit or contract, if possible, shall identify the discharge volumes and the chemical or physical characteristics under which the wastewater and contact storm water will be accepted. In the event that a will-serve letter, permit, or contract cannot be provided, identify the most likely wastewater/storm water entity and discuss why the applicant was unable to secure the necessary assurances to serve the project's wastewater/storm water needs. Also, discuss the term of the wastewater service to the project, whether the wastewater entity has adequate permit capacity for the volume of wastewater from the project and has adequate permit levels for the chemical/physical characteristics of the project's wastewater and storm water for the life of the project, and any issues or conditions/restrictions the wastewater entity may impose on the project.				Section 5.5.2.3					

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Appendix B (g) (14) (D)	Identify all project elements associated with storm water drainage, including a description of the following:				See Below					
Appendix B (g) (14) (D) (i)	Monthly and/or seasonal precipitation and storm water runoff and drainage patterns for the proposed site and surrounding area that may be affected by the project's construction and operation;				Section 5.5.1.4					
Appendix B (g) (14) (D) (ii)	Drainage facilities and the design criteria used for the plant site and ancillary facilities, including but not limited to capacity of designed system, design storm, and estimated runoff;				Section 5.5.2.4					
Appendix B (g) (14) (D) (iii)	All assumptions and calculations used to calculate runoff and to estimate changes in flow rates between pre- and post construction; and				Appendix E, Preliminary Geotechnical and Geologic Hazards Evaluation					
Appendix B (g) (14) (D) (iv)	A copy of applicable regional and local requirements regulating the drainage systems, and a discussion of how the project's drainage design complies with these requirements.				Section 5.5.5 Table 5.5-5					
Appendix B (g) (14) (E)	An impacts analysis of the proposed project on water resources and a discussion of conformance with water-related LORS and policy. This discussion shall include:				See Below					

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Appendix B (g) (14) (E) (i)	The effects of project demand on the water supply and other users of this source, including, but not limited to, water availability for other uses during construction or after the power plant begins operation, consistency of the water use with applicable RWQCB basin plans or other applicable resource management plans, and any changes in the physical or chemical conditions of existing water supplies as a result of water use by the power plant;				Section 5.5.2.2					
Appendix B (g) (14) (E) (ii)	If the project will pump groundwater, an estimation of aquifer drawdown based on a computer modeling study shall be conducted by a professional geologist and include the estimated drawdown on neighboring wells within 0.5 mile of the proposed well(s), any effects on the migration of groundwater contaminants, and the likelihood of any changes in existing physical or chemical conditions of groundwater resources shall be provided;				N/A					
Appendix B (g) (14) (iii)	The effects of construction activities and plant operation on water quality and to what extent these effects could be mitigated by best management practices;				Section 5.5.2.2 Section 5.5.5.1					
Appendix B (g) (14) (iv)	If not using a zero liquid discharge project design for cooling and process waters, include the effects of the proposed wastewater disposal method on receiving waters, the feasibility of using pre-treatment techniques to reduce impacts, and beneficial uses of the receiving waters. Include an explanation why the zero liquid discharge process is “environmentally undesirable,” or “economically unsound;”				N./A					

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Appendix B (g) (14) (v)	If using fresh water, include a discussion of the cumulative impacts, alternative water supply sources and alternative cooling technologies considered as part of the project design. Include an explanation of why alternative water supplies and alternative cooling are "environmentally undesirable," or "economically unsound;"				Section 4.5 Section 5.5.2.2 Section 5.18.3.4					
Appendix B (g) (14) (vi)	The effects of the project on the 100-year flood plain, flooding potential of adjacent lands or water bodies, or other water inundation zones; and				Section 5.5.2.4					
Appendix B (g) (14) (vii)	All assumptions, evidence, references, and calculations used in the analysis to assess these effects.				Appendix N, Initial Drainage Report					
Appendix B (i) (1) (A)	Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, leases, and permits applicable to the proposed project, and a discussion of the applicability of, and conformance with each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed; and				Table 5.5-5					

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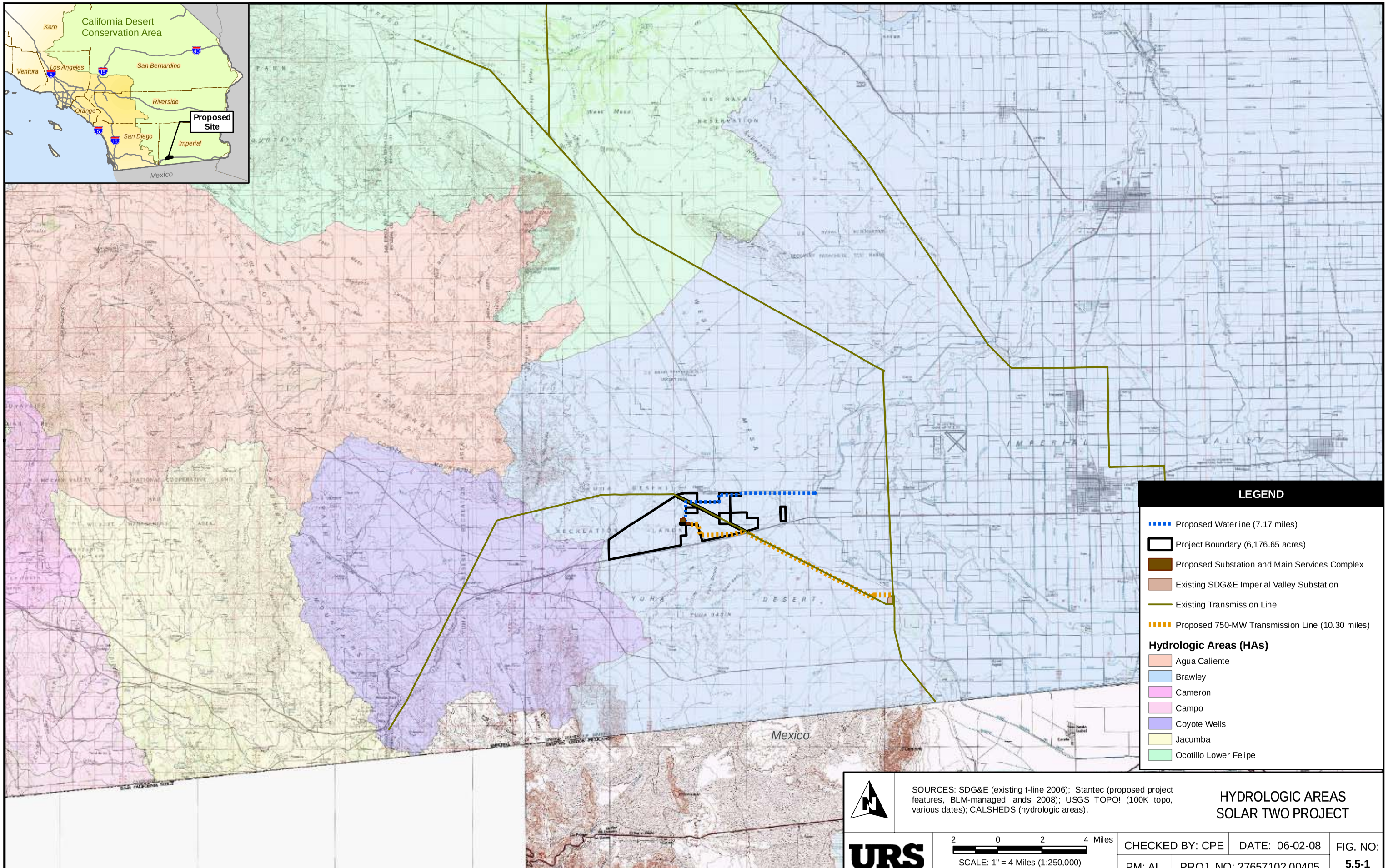
Appendix B (i) (1) (B)	Tables which identify each agency with jurisdiction to issue applicable permits, leases, and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.				Table 5.5-5 Table 5.5-7					
Appendix B (i) (2)	The name, title, phone number, address (required), and email address (if known), of an official who was contacted within each agency, and also provide the name of the official who will serve as a contact person for Commission staff.				Table 5.5-6					
Appendix B (i) (3)	A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.				Table 5.5-7					



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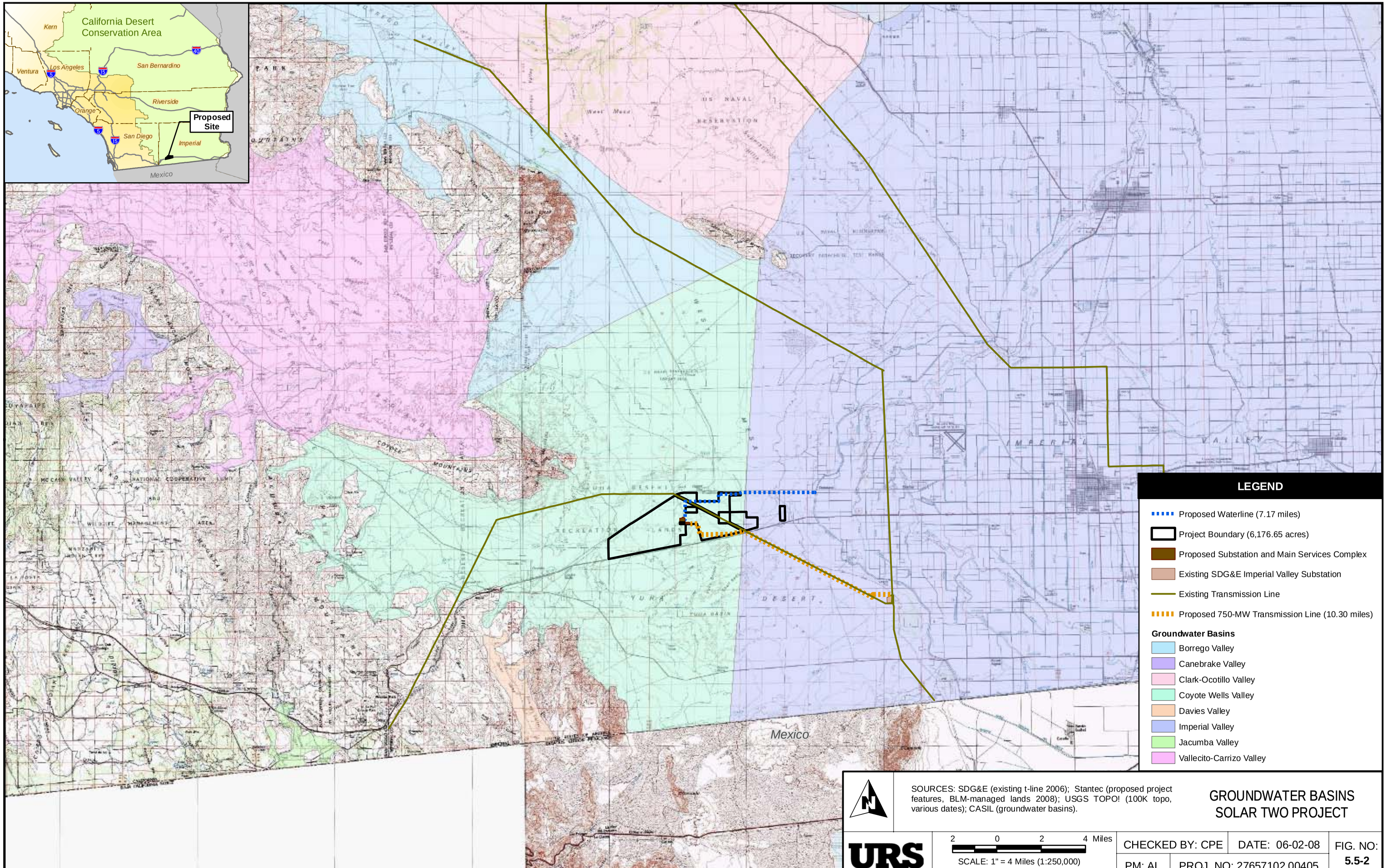

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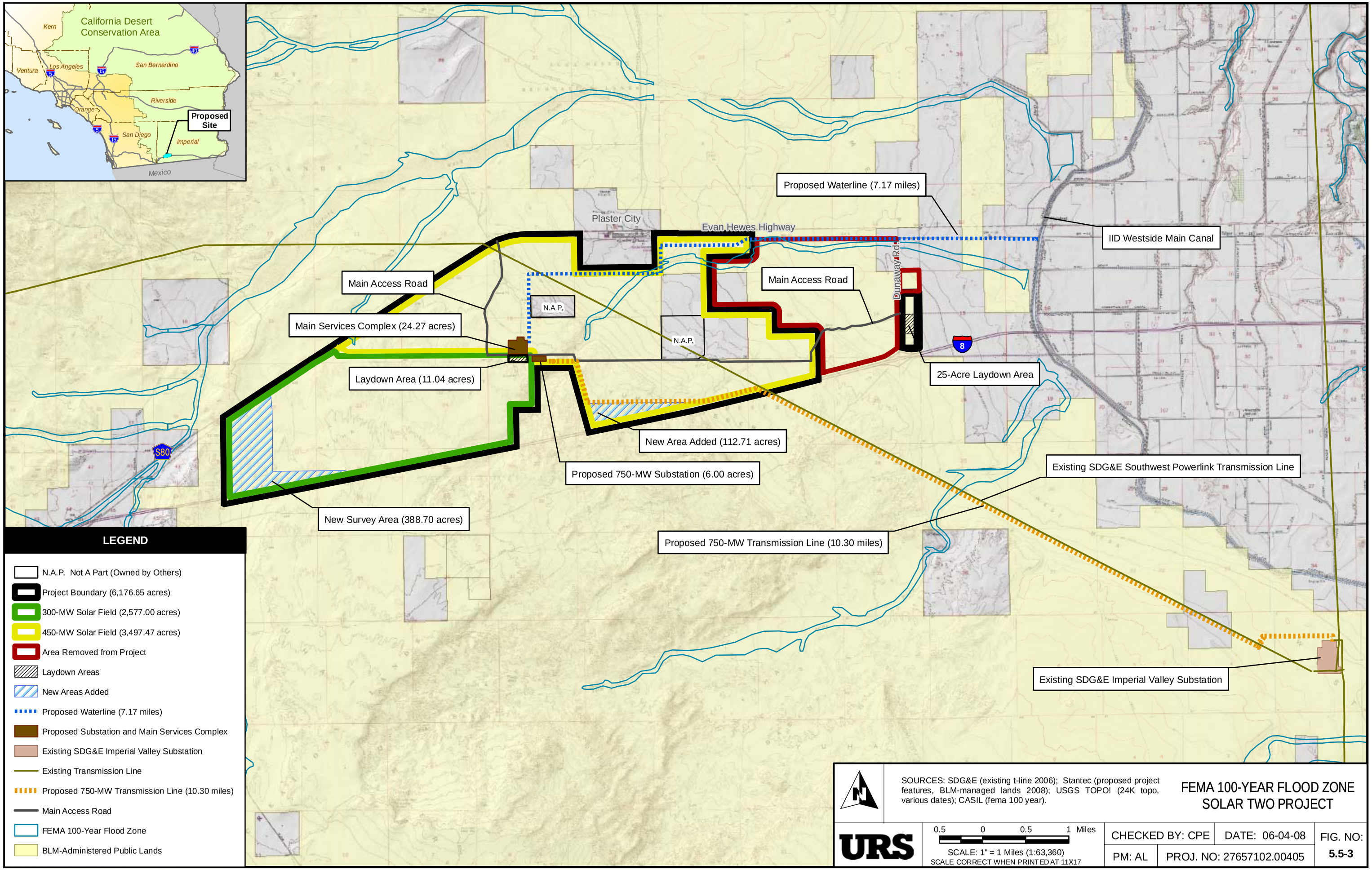

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