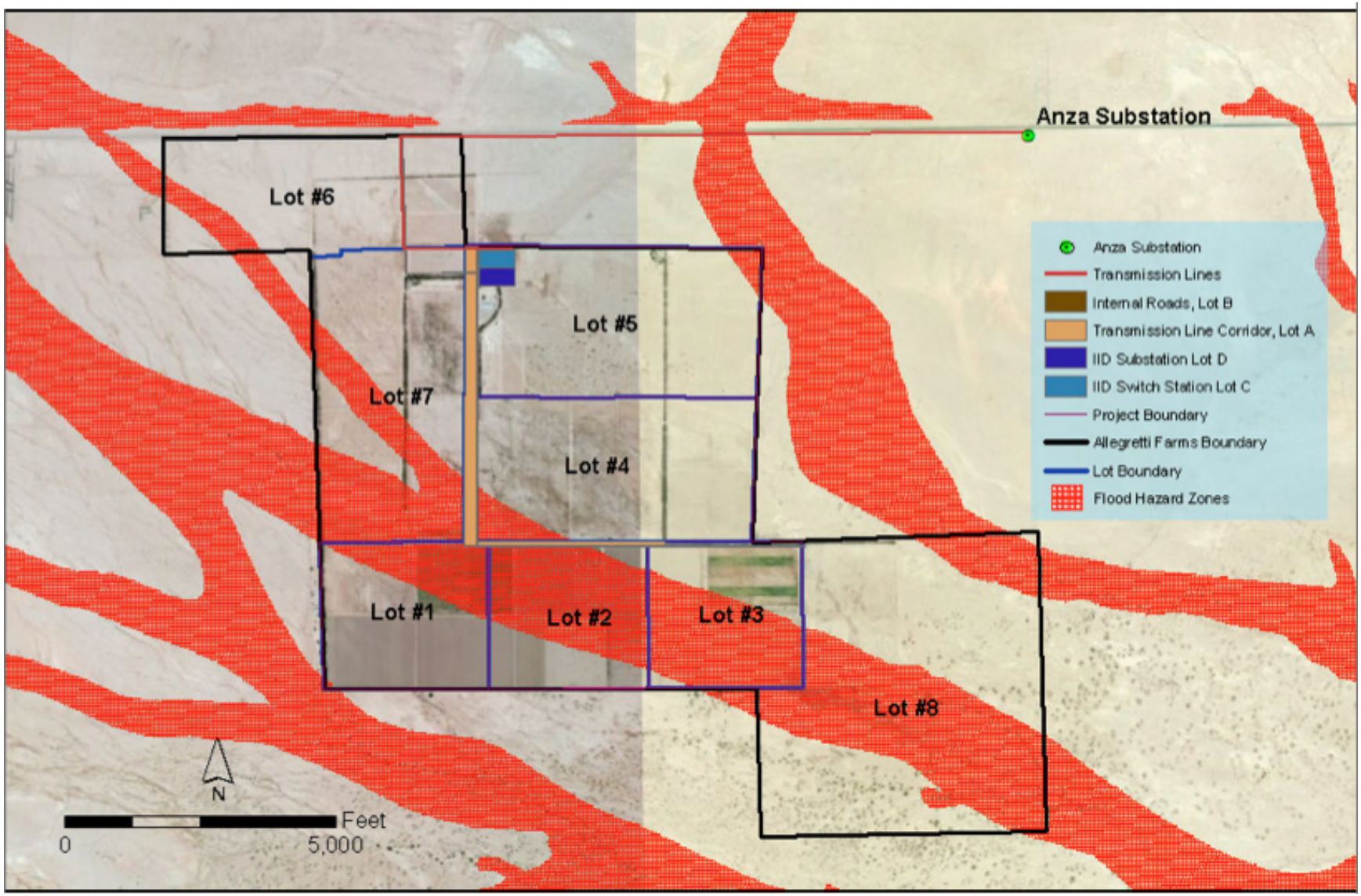
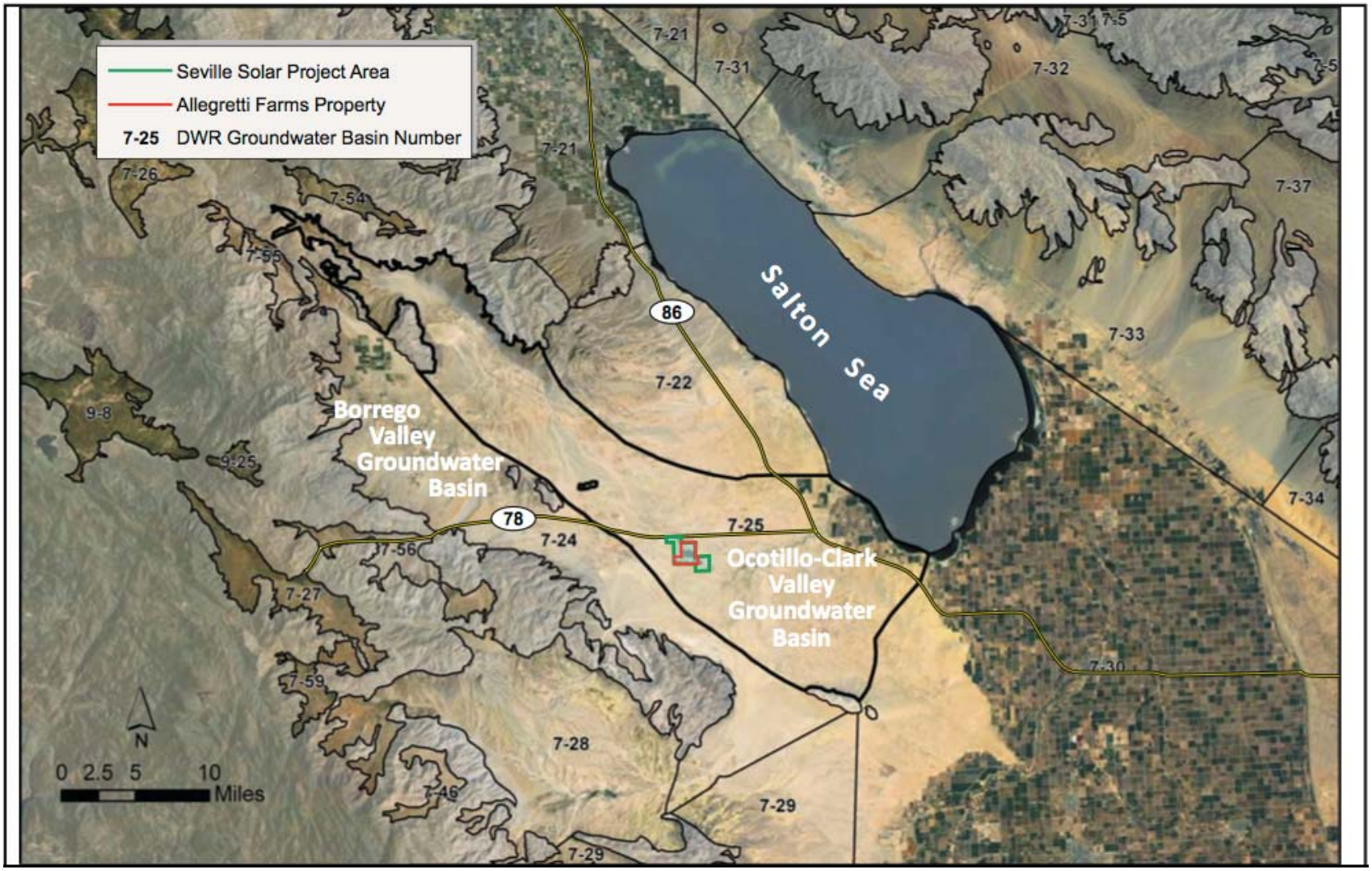


Source: AEI CASC 2013.

FIGURE 4.11-3
FLOOD ZONE A (100 YEAR FLOOD ZONE)



Source: Todd 2013.

FIGURE 4.11-4
SEVILLE SOLAR FARM COMPLEX LOCATION

Restrictive Structures

The northwest-trending Coyote Creek and Superstition Mountain faults bound the basin on the south. Water level differences of 100 feet on opposite sides of the Coyote Creek fault indicate the fault is a barrier to groundwater flow. The San Jacinto and San Felipe Hills faults also displace rocks in the basin; however, it is not if these faults are barriers to groundwater movement (DWR 2004).

Recharge Areas

Groundwater recharge to the Ocotillo Valley Groundwater Basin likely occurs through percolation of runoff from the Santa Rosa Mountains north and east of the valley (DWR 2004).

Groundwater Level Trends

Groundwater levels near Clark Lake did not change appreciably from 1952 through 1980. During the same period, water levels south of Coyote Mountain declined approximately 30 feet. Groundwater generally flows southeastward through the Ocotillo Valley Groundwater Basin; however, water levels suggest that some groundwater may flow southwestward out of Clark Valley and spill over the Coyote Creek fault into the Borrego Valley Groundwater Basin (DWR 2004).

Groundwater Storage

According to DWR's Bulletin 118, the groundwater storage capacity estimated for Clark Valley is approximately 450,000 acre feet (AF) and the capacity estimated for Ocotillo Valley is approximately 5,800,000 AF. These estimates add to approximately 6,250,000 AF. Bulletin 118 notes that the quantity of groundwater in storage is unknown (DWR 2004).

Groundwater Budget (Type C)

Annual recharge to the basin is estimated to be approximately 1,200 acre-feet per year (AF/Y) for the Clark Valley portion of the basin and approximately 1,100 AF/Y for the Ocotillo Valley portion (DWR 2004).

Groundwater at the solar farm project site was previously used for irrigation purposes. Two groundwater wells were initially drilled to provide the water necessary for farming: the San Felipe Well and the Jacobs Domestic Well (EMA 2013a). Seven more water wells were drilled for agricultural uses between 1965 and 1982 (**Figure 4.11-5**).

Aquifers

A shallow and deep aquifer is located in the Project area. Water levels in the shallow aquifer are approximately 100 feet higher than the deep aquifer. The deep aquifer has better water quality than the shallow aquifer. Total Dissolved Solids (TDS) concentrations are approximately three to four times greater in the shallow aquifer. TDS concentrations in the Allegretti wells have been on the order of 1,200 to 1,800 milligrams per liter (mg/L) between 1962 and 2002. Allegretti Well #7 had slightly better quality (TDS concentrations of 880 and 930 mg/L) when sampled in 1982 and 1995, indicative of better water quality in the upper part of the deep aquifer. The secondary maximum contaminant level (MCL), derived from human welfare considerations (e.g., taste, odor, laundry staining), for TDS is 500 mg/L. The shallow aquifer is unconfined and appears to feed the San Felipe and Fish Creek Wash located southeast of the Property. The deep aquifer is at least partially confined. Existing wells on the proposed solar farm complex site pump water from the deep aquifer. However, in the vicinity of the Project area, irrigation return flows do not return to the deep aquifer because of the presence of a perched shallow aquifer (Todd 2013, p. 7).

The Preliminary Geotechnical Investigation (GS Lyon 2013) prepared for the proposed Project identified perched groundwater in one bore hole at a depth of 43 feet below ground surface. Other records have identified groundwater at a depth of 77 to 91 feet below ground surface approximately one mile to the west of the solar farm project site. Both of these groundwater sources may be perched, disconnected from the lower aquifer. The regional groundwater table is expected to be at depths greater than 150 feet (PETRA 2012a, p. 6). Depth to groundwater may fluctuate due to localized geologic conditions, precipitation, irrigation, drainage and construction practices in the region. Based on the regional topography, groundwater flow is assumed to be generally towards the southeast within the vicinity of the Property. Flow directions may also vary locally within the Project area.

In the vicinity of the Property, five wells exist to the west (Payne, Gann, Scholl, Steinruck, and Blu-In Park wells) and five wells exist to the east (two United States Geological Survey [USGS] test wells, Harpers well, and two Three Flags Ranch wells). The Allegretti wells are the main pumpers of the deep aquifer. Other wells that pump the deep aquifer (Payne, Gann, and Blu-In Park) pump small quantities for dust control and landscape irrigation. Historic use for the Blu-In Park well has been approximately two acre feet per year (AF/Y). A conditional use permit (CUP) has been issued allowing for a new well on an adjacent parcel to supply up to 10 AF/Y to the 187-space Blu-In RV Park. Water use for the existing Blu-In Park well remains limited to two AF/Y. The Three Flags Ranch wells were pumped briefly in the mid-1980s to irrigate 1,000 to 1,200 acres of citrus. Pumping was soon replaced with Colorado River water from the Imperial Irrigation District (Todd 2013).

Existing Water Quality

Surface Water Quality

While surface waters are not anticipated to be impacted by the Project or used as a water supply source, the discussion of surface water quality provides context on the condition of surface waters relevant to the Project area.

The Project area is located within the Anza Borrego Planning Area of the SWRCB's *Water Quality Control Plan, Colorado River Basin Plan* which includes the Clark, West Salton Sea, and Anza-Borrego Hydrologic Units (SWRCB 2006). It covers 1,000 square miles in the southwest corner of the region, mostly in San Diego and Imperial Counties, with a small segment in Riverside County. Elevations in the Anza Borrego Planning Area range from 230 feet below sea level at the Salton Sea to over 6,000 feet along the western boundary. The major communities in the Planning Area are Salton City and Borrego Springs. Drainage within the Planning Area flows to the Salton Sea except for two small areas of internal drainage in Clark and Borrego Valleys in the northwest corner of the Planning Area (SWRCB 2006).

Average annual precipitation ranges from less than 3 inches along the eastern boundary of the Anza Borrego Planning Area (near Imperial Valley) to 25 inches in the mountain divide between the Salton Sea and Pacific Ocean drainages. Runoff is created by winter precipitation (especially in the higher elevations) and summer thunderstorms. Perennial flow includes reaches of Coyote and San Felipe Creeks (SWRCB 2006).

The Salton Sea is the major surface water feature in the vicinity of the Project area, and excess surface water flows in the Project area drain to the Salton Sea. The Salton Sea is 30 miles long, approximately 10 to 15 miles wide, with an average depth of 30 feet. It has an area of approximately 360 square miles, and its surface elevation, although variable, is approximately 227 feet below mean sea level. The Salton Sea is a saline water body with no outlet, occurring in a fault-controlled sub-sea level basin. The Sea serves as a reservoir to receive and store agricultural drainage and seepage waters, but also provides important wildlife habitat and is used for recreational purposes which include boating and fishing. Replenishment of the Salton Sea is predominantly from farm drainage and seepage, and occasional and

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sometimes significant storm runoff from the Coachella Valley, Imperial Valley, and Anza Borrego area. The gross contributing watershed comprises approximately 7,500 square miles (SWRCB 2006).

Salinity concentrations in the Salton Sea are slightly higher than those of ocean water, with TDS at approximately 44,000 parts per million (ppm) (Imperial County 1993b, p. 9). Historic data on the Salton Sea shows a gradual increase in the concentration of dissolved salts. This increase has resulted from the high evaporation rates and continual inflow of drainage waters with high salt loads from canals and laterals in Imperial Valley and from agricultural activity in Mexico.

At present, the primary water quality problem facing the Salton Sea continues to be increasing salinity and associated selenium buildup. Approximately five million tons of salt per year are carried into the Salton Sea. Selenium entering the Salton Sea originates from the Colorado River which contains approximately one to two part per billion (ppb) of selenium (Imperial County 1993b, p. 56). As the Colorado River water is brought into Imperial Valley by various canals, the selenium becomes concentrated due to the evaporation and evapotranspiration that occurs during farming of agricultural fields. The agricultural drains then carry this selenium enriched water into the Salton Sea. The New and Alamo Rivers contain approximately seven to eight parts per billion of selenium (ppb) when they reach the Sea. The selenium is taken up and concentrated by small organisms (e.g. fish), which in turn, are eaten by larger organisms (e.g. birds).

Groundwater Quality

The following description of groundwater quality was taken from Bulletin 118, California's Groundwater, Ocotillo-Clark Valley Groundwater Basin (DWR 2004). The Project proposes use of groundwater for construction and operations.

Characterization

The dominant cation found in groundwater near Clark Lake, in the northern part of the Ocotillo-Clark Valley Groundwater Basin, is sodium or calcium. The dominant anions are sulfate and chloride. TDS content ranges from 560 to 1,983 milligrams per liter (mg/L) and averages approximately 950 mg/L. Groundwater in the southern part of the basin has sodium chloride-sulfate or sodium chloride character. Measured TDS content ranges from 955 to 4,656 mg/L and averages approximately 2,500 mg/L. TDS content often increases though time for wells with multiple measurements and increases from northwest to southeast in the basin (DWR 2004).

Impairments

High TDS, sulfate, chloride, and fluoride concentrations locally impair groundwater for domestic and irrigation use (DWR 2004).

B. TRANSMISSION LINE

The 3.0 mile IID 92 kV transmission line extending from the IID switching station on Lot C of the solar farm complex site to the Anza Substation is proposed to be located on lands within the IID ROW and would be constructed and operated by IID. Likewise, the modifications to the Anza Substation would be located on land owned by the IID. The following details are provided based on available information for the region and the Project area.

The proposed transmission line is located within the same watershed and hydrologic unit as the Project area (Anza Borrego Hydrologic Unit of the Salton Sea watershed in the Colorado River region). Tarantula Wash crosses the existing 92 kV transmission line along State Route (SR) 78 and trends south past the northeast corners of Lots 5 and 8 of the proposed solar farm complex site. Like the solar farm complex site, a portion of the transmission line is located in Flood Zone A, defined by FEMA as areas with a one

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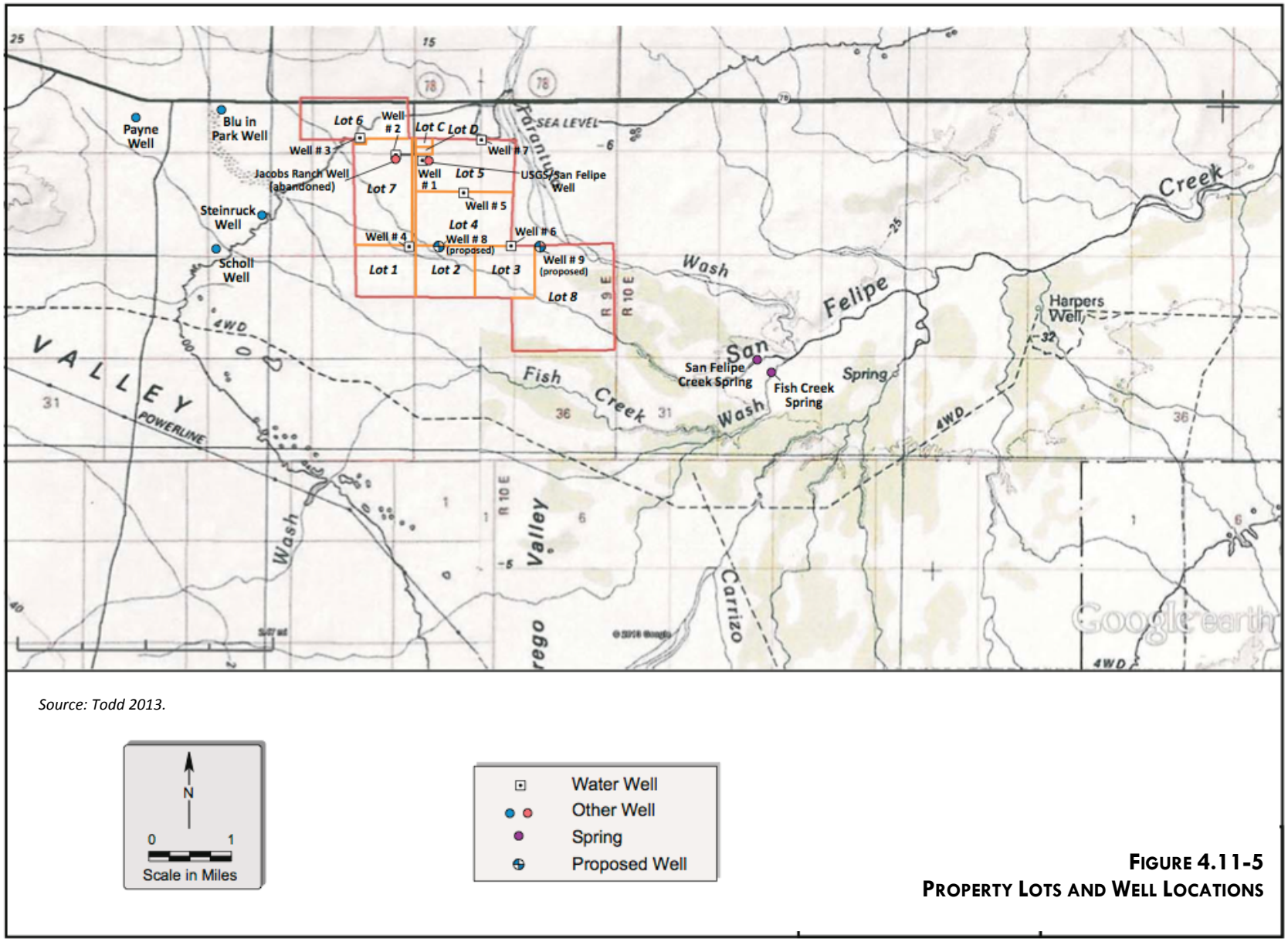

Source: Todd 2013.

FIGURE 4.11-5
PROPERTY LOTS AND WELL LOCATIONS

percent annual chance of flooding (and a 26 percent chance of flooding over the life of a 30-year project). The remainder of the proposed transmission line alignment is located in Flood Zone X, an area of moderate flood hazard, between the limits of the 100-year and 500-year floods (**Figure 4.11-3**). The majority of the transmission line ROW has been previously disturbed by off-road vehicles and frequent "dragging" by the Border Patrol.

4.11.3 IMPACTS AND MITIGATION MEASURES

A. STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following CEQA Guidelines, as listed in Appendix G. The proposed Project would result in a significant impact to hydrology and water quality if it would result in any of the following:

a) Violate any water quality standards or waste discharge requirements.

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

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

d) Substantially alter the existing drainage patterns of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite.

e) Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

f) Otherwise substantially degrade water quality.

g) Place housing within a 100-year flood hazard area as mapped on a Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

h) Place within a 100-year flood hazard area structures which would impede or redirect the flood flows.

i) Expose people or structures to a significant risk of loss injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

j) Inundation by seiche, tsunami, or mudflow.

B. ISSUES SCOPED OUT AS PART OF THE INITIAL STUDY

Two criteria were scoped out as part of the Initial Study. Criterion “g” was scoped out because it deals with placement of housing within the 100-year floodplain. The proposed Project does not include a residential component. Therefore, no homes would be constructed within a 100-year flood zone. Thus, no impact is identified for this issue area and it is not discussed further in this section.

Criterion “j” was scoped out because no bays or lakes are located within a two-mile radius of the Project area. Furthermore, the Project area and Imperial Valley are over 75-miles inland from the Pacific Ocean. In addition, the Project area is relatively flat and level, eliminating the potential for exposure to

mudflows. Thus, no impact is identified for these issues and they are not discussed further in this section.

C. METHODOLOGY

The analysis of impacts to hydrology and water quality were based on the results from several technical studies, the physical characteristics of the Salton Sea and its watershed, and the physical characteristics of the Ocotillo-Clark Valley Groundwater Basin. The following technical studies were consulted: the "Seville Solar Project Jurisdictional Delineation" (HELIX 2014a), the Phase I ESA Report Seville Solar Farm (GS Lyon 2013), the "Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis" (AEI CASC, 2013); the "Infiltration Test Results, Seville Solar Site" (PETRA 2012b); and the "Memorandum RE: San Felipe Creek/Seville Solar Complex Response" (Sidor 2013).

Groundwater impacts were assessed based on the "Preliminary Geotechnical Investigation, Proposed Seville Solar Energy Facility" (PETRA 2012a) and the *Water Supply Assessment, Seville Solar Farm Complex* (Todd 2013).

D. PROJECT IMPACTS AND MITIGATION MEASURES

Violate Water Quality Standards or Waste Discharge Requirements

Impact 4.11.1 Implementation of the proposed Project would generate small amounts of runoff during construction and operation of the solar farm complex. This impact is considered **less than significant**.

Construction

Of the Property's 2,440 acres, approximately 1,235 acres of former active farmland that has been idle in recent years would be converted to accommodate the proposed solar farm complex site (i.e. solar arrays, O&M buildings, parking, water wells, access roads, Gen-tie lines). Approximately three additional acres would be disturbed during construction of the 92 kV transmission line (2.3 acres), and the IID Anza Substation modifications (0.24 acre).

The solar farm complex site is relatively flat and requires minimal grading to accommodate construction of the solar fields and foundations for equipment and buildings. Light grading and compacting are needed prepare the solar the solar farm complex site. Dust generated during construction would be controlled by watering. The Project proposes application of advanced, environmentally safe, polymer emulsion dust control palliatives that produce highly effective dust control, erosion control, and soil stabilization. The solar arrays would be mounted on racks supported by driven piles. The depth of the piles would be dependent on the geotechnical recommendations for the proposed Project. The arrays would be constructed on a shallow pier type foundation. In compliance with County of Imperial requirements, any groundwater discharges from groundwater pumping at on-site wells would be fully contained within the solar farm complex site boundaries either through infiltration at the soil surface or retained in the on-site retention basins.

As a result of the recommended site design and source control measures, and the construction of the required detention basins, water quality exceedences are not anticipated and pollutants are not expected within Project runoff that would adversely affect beneficial uses in downstream receiving waters. Although specific Imperial County regulations regarding storm water NPDES and new development do not exist, the proposed Project plans to institute controls designed to limit discharges to the appropriate standard. A Notice of Intent (NOI) to comply with the general permit for construction activities would be filed with the State Water Resources Control Board (SWRCB), and the required Storm Water Pollution Prevention Plan (SWPPP) would be prepared and implemented consistent with the

requirements of the State Water Resources Control Board. Therefore, **less than significant** impacts would occur relative to violating water quality standards and degrading water quality during construction of the Project.

Operation

The proposed Project would not use or store any appreciable quantities of hazardous chemicals within the Project area during normal operations. Maintenance activities that would be conducted within the solar farm complex site would include periodic panel washing and periodic testing of equipment, inspection and repair of project components, and maintenance of on-site roads and drainage systems. Dust generated by maintenance trucks would be controlled during operations by the periodic application of soil binders to exposed soil surfaces. Vegetation growing within the Project area would be periodically removed manually and/or treated with herbicides. Fuel that may be used within the Project area for emergency generators or during maintenance activities would be stored in secondary containment. In addition, minimal waste is expected to be generated during normal operations. All waste, including trash and litter, garbage, and other solid waste would be removed to a disposal facility authorized to accept such materials. Commercial garbage collection and hauling would be contracted to remove waste and recyclable materials.

Water required for proposed Project maintenance activities, dust control, solar panel washing and fire protection would be stored in an on-site water tank of approximately 20,000 gallons at the solar farm complex site. Panel washing activities are not anticipated to generate runoff or contain pollutants (e.g. grease, heavy metals) other than dust. Any runoff from panel washing and other maintenance activities would evaporate or percolate through the ground, as a majority of the surfaces in the solar farm complex site would remain pervious.

The Project proposes application of advanced, environmentally safe, polymer emulsion dust control palliatives that produce highly effective dust control, erosion control, and soil stabilization. The effect these materials would have on solar farm complex site hydrology would depend on the amount and method of application. Dust control palliatives would likely be applied in a manner where the solar farm complex site would maintain permeability and infiltration to allow moisture from storm events to infiltrate the soil. The “Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis” (AEI-CASC 2013) analyzed the worst-case scenario of 100 percent runoff in the event that the application of dust and erosion control products caused soils to have zero permeability or not allow moisture from storm events to infiltrate the soil as required by Imperial County. Therefore, **less than significant** impacts would occur relative to violating water quality standards and degrading water quality during operations and maintenance of the proposed Project.

Although no significant impacts with regard to water quality are anticipated to occur, each solar energy site project owner would be responsible for operation and maintenance of site design, source control, and treatment control Best Management Practices (BMPs) on their solar energy site. The solar energy site project owners would also be responsible for long-term funding for BMP maintenance. The owner's association created by the industrial common interest development would be responsible for operation and maintenance of site design, source control, and treatment control BMPs for the common interest lots (Lots A, B and C). IID would be responsible for the same activities on Lot D (the IID switch station). In addition, the County of Imperial would be granted access to the Property for inspection through a formal agreement to ensure that the owners are properly carrying out the BMPs over the life of the Project.

Reclamation

A the end of the Project's useful life, the solar energy farm complex site would be decommissioned, and its surface disturbance reclaimed, with the exception of the roads constructed on Lot B to access each of the parcels and all of the water wells. These features would remain as part of the major subdivision proposed by the Project. The creation of the subdivision requires that each lot have physical and legal access, and each lot have the access to water. The IID-owned facilities (IID switchyard and 92 kV transmission line on the Property, 92 kV transmission line with underbuilt 12.5 kV distribution line, and the 12.5 kV distribution line system constructed on the Property) would not be removed until IID determined that these improvements were no longer needed and could be retired and removed.

Reclamation of the solar farm complex may require use of small amounts of groundwater for dust control and equipment maintenance and reclaiming surface soils to approximate the existing idle farmland condition. Given that reclamation activities would occur 20 to 25 years in the future, it is anticipated that these activities would be subject to mandatory compliance with water quality standards similar to or more stringent than those currently required. Therefore, **less than significant** impacts would occur relative to violating water quality standards and degrading water quality during Project reclamation.

Mitigation Measures

None required.

Significance after Mitigation

None required.

Result in Depleted Groundwater Supplies or Interfere Substantially with Groundwater Recharge

Impact 4.11.2 Implementation of the proposed Project would require use of groundwater during construction and operation. However, proposed pumping levels are anticipated to be sustainable, and excess groundwater would be retained on-site and allowed to percolate back into the groundwater table. Therefore, impacts to groundwater supplies and recharge are considered **less than significant**.

Construction

The proposed Project intends to use groundwater as its source of water during construction. Seven ground water wells are located on the solar farm complex site, although only the domestic water well (#7) and two commercial water wells (#4 and #6) are currently operational. An estimated 650 AF of water would be needed during construction of the proposed Project (Todd 2013). Project water would be obtained from either the existing water wells or the two new wells (#8 and #9) to be constructed.

The geotechnical investigation prepared for the proposed Project states that adverse effects to shallow groundwater are not anticipated to result from Project construction (PETRA 2012a). Any excess pumped water would percolate back into the groundwater basin in place or in proposed on-site detention facilities designed to meet the requirements of the County of Imperial. In addition, construction-phase water use would be temporary in nature. Therefore, construction of the proposed Project is anticipated to have a **less than significant** impact on groundwater supply and groundwater recharge during Project construction.

Operation

The proposed Project intends to use groundwater as its source of water during operation. Groundwater would be supplied to the solar farm complex site from up to nine wells. Seven of these wells exist on the property (three are currently operational). Two new wells would be drilled. Water would be provided by each solar energy project owner or by the Ranch Oasis Mutual Water Company, which was established in 1994 for this purpose. Water would be needed for domestic use, solar panel washing and fire protection. Water system facilities would include a 20,000 gallon storage tank on each of the five solar energy project sites. Wastewater would go to septic systems on each of the five solar energy project sites or to underground storage tanks for periodic pumping and off-site disposal.

A water supply assessment (WSA) was prepared to document the Property's existing and future water supplies and compare them to the area's future water demand including that of the proposed Project. This comparison, conducted for both normal and drought conditions during a 20 year projection, is the basis for an assessment of water supply sufficiency in accordance with the requirements of California Water Code Section 10910 (Todd 2013).

Past and Current Water Demand

Past groundwater pumping on the Property could have exceeded 10,000 AF/Y in the late 1970s and was reportedly 3,250 to 6,050 AF/Y between 1983 and 1996, with the exception of 1990 when no pumping occurred. Pumping averaged 4,400 AF/Y between 1993 and 1996. Between 1996 and 2009, pumping was estimated to average around 2,800 AF/Y assuming an average of 500 acres were planted and a water application rate of 5.6 AF/Y per acre. The Property was leased to another tenant in 2010 and 2011 and the planted acreage and crops changed. Pumping decreased to an estimated 200 AF/Y to 225 AF/Y during these two years. This estimate is based on planted acreages and application rates of 2.4 acre feet per year per acre (AF/Y/AC) and 2.6 AF/Y/AC for onions and wheat, respectively. It also includes a very rough estimate of water used to fill an onsite reservoir for water fowl hunting. Information on water use in 2012 is not available but most likely less than 2010 and 2011 use. The existing residential well supports two residences (one occupied), a swimming pool, a lawn, approximately six citrus trees, and a number of palm, tamarisk and pine trees. The WSA assumed that the occupied residence has used approximately one AF/Y (Todd 2013).

Projected Water Demand

The amount of water needed for normal operations of the solar farm complex is conservatively estimated at 190 AF/Y, with an additional 25 AF for potential future non-solar, ancillary uses. This translates to a total of 215 AF/Y for operations over the 20-year anticipated lifespan of the proposed Project (Todd 2013).

Drought Water Demand

During times of drought, future water use is anticipated to remain approximately the same at the solar energy farm complex, plus up to four potential residences that could be constructed in association with non-solar energy farm complex lots within the Property (650 AF for construction; 215 AF/Y for operations) (Todd 2013).

Future Water Supply Estimates

A detailed water balance of the Ocotillo-Clark Valley Groundwater Basin was not conducted. However, the recovering water levels indicate that the pumping between 2002 and 2011 was within sustainable rates. The lower end of this pumping occurred in 2010 and 2011 and was estimated to be on the order of 200 AF/Y to 225 AF/Y. Water levels increased at a steeper angle during this time. Crop acreages and

associated groundwater pumpage between 2002 and 2009 were greater than during 2010 and 2011 (but not quantifiable with available data at this time), indicating that the 215 AF/Y of pumping proposed for this Project and Property area would be sustainable during normal and drought conditions (Todd 2013).

The on-going monitoring of groundwater levels in the USGS well and the staged implementation of the proposed Project would provide progress checks on the impacts of the Project's water use on groundwater levels. In addition, potential residential water use would be required to stay within the pumping volumes stated in the CUPs required for each well. The CUPs would expressly limit the amount of water which could be pumped from each well; require installation of a flow meter; and require the installation of flow meters and annual water use reports to the Imperial County Planning Department (Todd 2013, pp. 10 and 11). Therefore, Project operations are anticipated to have a **less than significant** impact on groundwater supply and groundwater recharge.

Reclamation

Reclamation of the solar farm complex may require use of small amounts of groundwater for dust control and equipment maintenance as a part of deconstructing structures and infrastructure. Given that reclamation activities would occur 20 to 25 years in the future, it is anticipated that these activities would be subject to mandatory compliance with standards similar to or more stringent than those currently required. Further, Project-related use of groundwater would no longer be required. Reclaiming surface soils to approximate existing idle farmland would not deplete groundwater supplies and would enhance in groundwater recharge capability across site. Therefore, upon reclamation, the Project is anticipated to have a **less than significant** impact on groundwater supply and groundwater recharge.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.

Result in Substantial Flooding On- or Off-Site/Create or Contribute Runoff Exceeding Capacity

Impact 4.11.3 Implementation of the proposed Project would generate on-site runoff. Existing drainage patterns would be maintained and the solar farm complex site would remain pervious. Therefore, impacts associated with flooding or exceedance of existing drainage capacity are considered **less than significant.**

Construction

The solar farm complex site is made up of flat, fallow agricultural fields that are reverting to the surrounding desert environment. Based on this topography, minimal grading would be necessary during construction of the proposed Project to support the solar fields, internal roads, and foundations for equipment and buildings. Any remaining crop residues, weedy growth or miscellaneous vegetation would be removed if necessary. Excavation would be required to install underground wiring and cables, electric poles, equipment pads, and common service area facilities (O&M building, septic system, etc). No excavation would be needed to accommodate PV structures as driven piles would be used. Depth for piles would be determined during final design consistent with geotechnical study recommendations. The existing topography would generally be maintained and the solar farm complex site would remain largely pervious (e.g. no major paved surfaces or structures). Therefore, **less than significant** impacts to on- and off-site drainage and flooding would occur during construction of the proposed Project.

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Operation

As discussed in subsection 4.11.2, Environmental Setting, Tarantula Wash crosses the proposed 92 kV transmission line alignment and the northeastern corners of proposed Lots 5 and 8 in a generally north/south direction. In its natural state, San Felipe Creek previously flowed through the southern third of the Property in a southeasterly direction; however, the creek has been subsequently diverted to the south at the western Property boundary by a 7-foot high earthen berm. No changes to Tarantula Wash or the San Felipe Creek flows are proposed, and the majority of the Project area would remain pervious throughout Project operations. However, the proposed Project would alter drainage within the solar farm complex site through the introduction of solar panels, O&M buildings, inverters, etc.

A Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis was prepared for the proposed Project to determine the peak storm water flows for the solar energy complex. The Project area currently drains generally to the southeast at a gentle gradient of approximately 0.30 to 1.20 percent. To fully retain the 100-year 24-hour peak flood volume resulting from precipitation falling on each of the five solar project areas, storm water retention basins are proposed on the southeastern corner of each of the five solar energy project sites.

To determine the flow through the Property, hydrology calculations were prepared for five off-site areas. Four of the five off-site areas (Areas B, C, D, and E) were calculated using the Riverside County Unit Hydrograph Method to determine the 100-year, 1-hour peak runoff flows along the upstream boundary of the Property. The fifth off-site area (Area A) is significantly larger (approximately 400,000 acres) than the other off-site areas, and exceeds the limitations of many traditional hydrologic computation methods. Therefore, a separate 100-year, 24-hr study was conducted on Area A to find its peak 100-year, 24-hour flow rate. Area A was divided into 8 subareas, each with a separate set of parameters and its own computed unit hydrograph. These 8 unit hydrographs were then routed using the SCS Convex Channel Routing Method based on the parameters of each subarea in order to generate one inclusive unit hydrograph (AEI-CASC 2013).

Runoff flows generated by off-site Area B concentrate at off-site Node 201, which is located along an existing natural watercourse that traverses around the northeast corner of the Property. Off-site Area E, the smallest of the off-site watersheds, drains onto the solar energy farm complex site at off-site Node 501 via sheet flow. Because off-site Area E is relatively flat and smaller in size, no defined watercourse exists at the outlet location along the northern boundary of the Property. Runoff flows generated by off-site Area D are directed via an existing levee along the northern side of SR 78 to a break location where runoff crosses the highway via surface flow. From here, flows continue south approximately 2,100 feet before flowing across the northern boundary of the Property (AEI-CASC 2013).

Runoff flows generated by off-site Areas A and C are concentrated along the western boundary of the Property where there is an existing 7-foot high (approximate) earthen berm that extends from the northwest corner of the Property to the southwest corner of the Property. According to the Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis, the FEMA map covering the property does not recognize the existing 7-foot high earthen berm running in a north-south alignment along the western Property boundary (AEI-CASC 2013). The FEMA map depicts a flood zone traversing the southwesterly corner of the Property (**Figure 4.11-3**). As such, AEI-CASC conducted preliminary analyses of off-site runoff flows generated by Areas A and C, considering the hydraulic and flood hazard scenarios associated with the 7-foot high earthen berm as follows:

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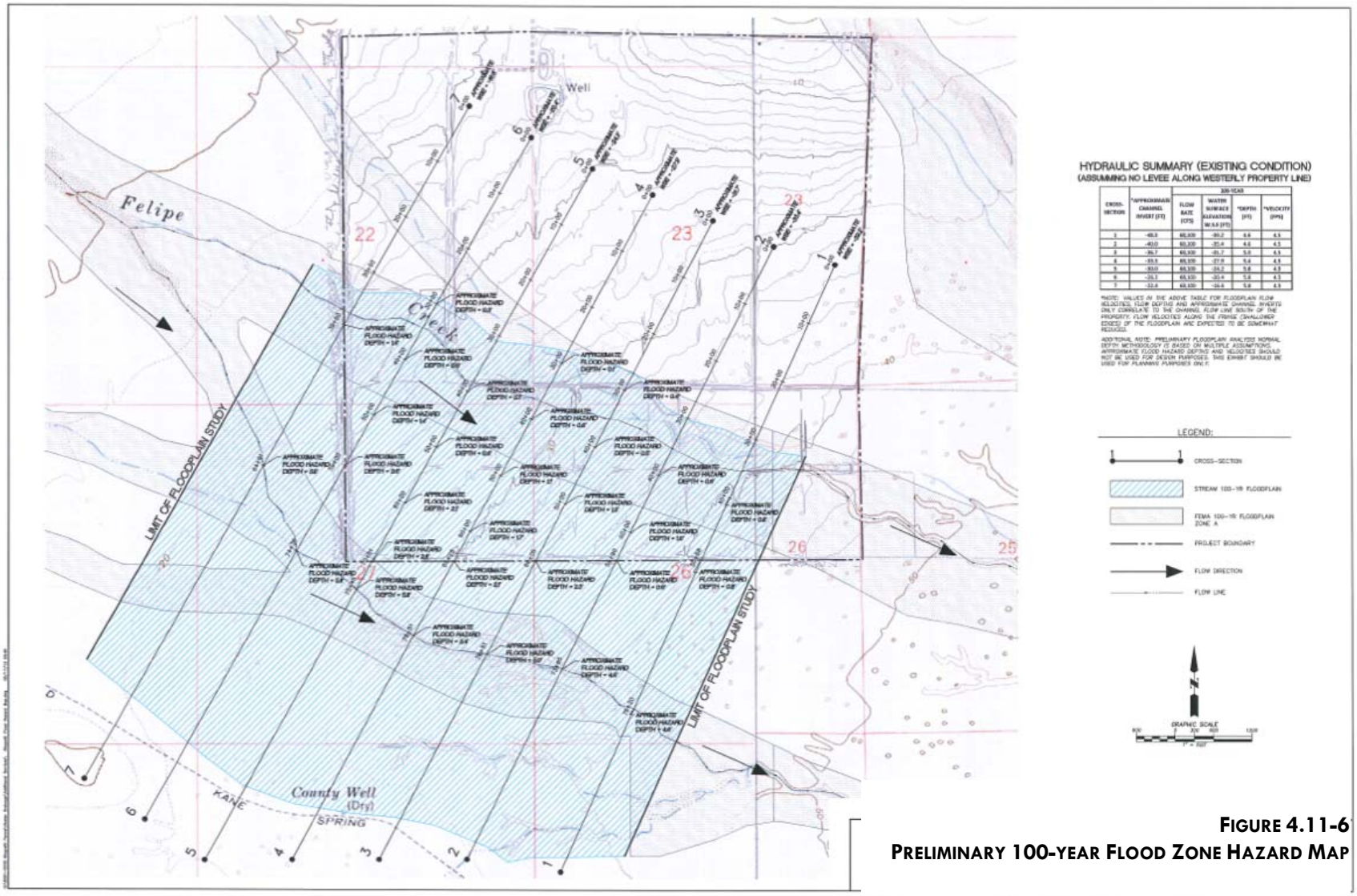

FIGURE 4.11-6
PRELIMINARY 100-YEAR FLOOD ZONE HAZARD MAP

Source: AEI CASC 2013.

1) A preliminary hydraulic (normal depth) analysis was conducted, considering runoff flows impacting the northern and southern sections of the earthen berm located along the western boundary of the Property. This analysis was developed to determine peak flow rates impacting the site during a 100-year storm event. Under this analysis, it is assumed that the berm is structurally sound and capable of withholding the off-site flows. Cross sections at two critical locations along the earthen berm were generated utilizing USGS maps and digital aerial topography of the Property (see Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis for Allegretti Farms Solar Project Site, included in **Appendix J** of this EIR). These cross sections were then analyzed for runoff flow capacity using the Normal Depth Method (AEI-CASC 2013).

   Northerly Berm Section (off-site Area C and Node 301) – At the concentration point off-site Area C, the cross section of the channel created by the 7-foot high earthen berm at off-site Node 108 was generated and analyzed, and found to have an approximate capacity of 25,740 cubic feet per second (cfs). Because Area C generates a computed 100-yr, 1-hr peak flow rate of approximately 2,557 cfs (lower than the modeled channel capacity), it is anticipated that runoff flows generated by Area C would be fully contained off-site by the berm. Runoff would be directed south via surface flow toward the southwest corner of the Property.

   Southerly Berm Section (off-site Area A and Node 108) - At the concentration point of off-site Area A, the cross section of the channel created by the earthen berm at off-site Node 108 was generated and analyzed, and found to have an approximate capacity of 173,496 cfs. Because Area A generates a 100-yr, 24-hr peak flow rate of approximately 68,100 cfs (lower than the modeled channel capacity), it is anticipated that runoff flows generated by both Area A and Area C (an off-site tributary area of nearly 400,000 acres) would be fully contained off-site by the berm. Runoff would be directed around the southwest corner of the Property, and continue downstream via surface flow following the existing natural watercourse (AEI-CASC 2013).

2) A preliminary flood hazard analysis was conducted, this time assuming the berm would not prevent off-site flood flows from entering the Property. The purpose of the analysis was to determine a preliminary understanding of potential channel flow velocities and flood depths across the solar farm complex site. The flood hazard analysis was based upon the preliminary off-site hydrologic analysis discussed above (AEI-CASC 2013).

   For the flood hazard analysis, two stream cross-sections (Cross-Sections 2 and 5; refer to the Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis for Allegretti Farms Solar Project Site, included in **Appendix J** of this EIR) were developed within the Property (perpendicular to the subject watershed flow line) and analyzed based upon an assumed Manning's n-value of 0.030 (typical for earthen/sandy bottom floodplains). The results of the analysis are shown in **Table 4.11-2**.

TABLE 4.11-2
PRELIMINARY HYDRAULIC RESULTS FOR CROSS-SECTIONS 2 AND 5

Cross-Section	Flood Depth (feet)	Flood Top Width (feet)	Flood Velocity (fps)
2	4.61	7,538	4.53
5	5.83	8,022	4.48

Source: AEI-CASC 2013.

Approximate flood depths were determined for other cross sections (Cross-Sections 1, 3, 4, 6 and 7) by interpolating and projecting the results from Cross-Sections 2 and 5. The average flood

velocities determined from Cross-Sections 2 and 5 were applied to Cross-Sections 1, 3, 4, 6 and 7. Flow velocities are estimated to be approximately 4.5 feet per second (fps) in the deepest section of the flood plain. Velocities along the fringe (shallower edges) of the floodplain are expected to be somewhat lower (AEI-CASC 2013).

[Note: the computed flood hazard area encompasses a larger area than FEMA's current floodplain area. In particular, the majority of the southwest corner of the Property is located within the computed flood hazard area. Please refer to the *Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis*, located in **Appendix J** of this EIR (AEI-CASC 2013) for additional discussion of this topic.]

Subsequent to preparation of the Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis, the Applicant requested that AEI-CASC confirm that two points, depicting depths of 3.6 feet and 2.8 feet (proximate to Cross Section 6, station 59+00, and Cross Section 5, Station 70+51), would not be indicative of the depths within the area that would be utilized for the solar arrays. AEI-CASC reviewed the cross sections and estimated the flood depths adjacent to the boundary, but likely within the solar farm complex site. The results indicated lower flow depths would occur within solar array areas as follows (Sidor 2013):

1. Cross Section 6, station 59+00, shows a depth of 3.6 feet (**Figure 4.11-6**). However, this point is located in the bottom of an existing swale along the west side of the earthen berm that has been graded along the western edge of the Property. This is not indicative of the depth of flow within the proposed solar development area east of the berm. The depth of flow within the adjacent development area east of the berm appears to be approximately 2.1 feet and decreases to the northeast.
2. Cross Section 5, Station 70+51, shows a depth 2.8 feet (**Figure 4.11-6**). However, this point appears to be located in a swale adjacent to the south of the southern perimeter road. This area also appears to be a small earthen berm adjacent to the swale. The 2.8 foot depth is not indicative of the depth of flow in the solar development area to the north. Flood depths in the adjacent area appear to be closer to 2.3 feet in depth at the most, and decrease to the northeast along the cross section.

The proposed Project would be designed to comply with the *County of Imperial Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvements, Drainage and Grading Plans within Imperial County* (County 2008). Specifically, the Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis (AEI-CASC 2013) analyzed the worst-case scenario of 100 percent runoff, and proposed retention basins would be sized to capture stormwater runoff as if none of it would penetrate into the ground. The County requirement to provide 3 inches of detention per tributary acre would be met and detained runoff would infiltrate the underlying soil.

To minimize flood hazards and risk, the Applicant proposes place all structures and inverters, transformers, and switch gear on foundations raised above the projected maximum flood levels and above the 100-year floodplain. No buildings would be constructed below grade. The only Project features to be constructed within FEMA Flood Zone A areas would be internal roads, photovoltaic modules and power inverters. Following the construction of the proposed Project, the entire solar farm complex site elevation would be 50 feet below msl or higher (Regenerate 2013). In addition, the existing berms on the west and north sides of the Property which currently divert off-site flow around the Property would be maintained. Any flows which breach the berm(s) would be allowed to flow unimpeded across the solar farm complex site and under the solar panels. Because the solar farm complex is being designed to accommodate the level of flood flows which would occur if the berms did

not exist, the structural integrity of the berms would not be affected by the proposed Project (Carey 2014a).

Any improvements within the Flood Zone A would be designed to comply with the County of Imperial Flood Zone Ordinances and guidelines. Section 91603.01 of Division 16 of Title 9 of the Imperial County Land Use Code designates any lands so identified by the FEMA on the Imperial County Flood Insurance Rate Maps, and any area of land located around the Salton Sea and lying at or below the -220 foot elevation contour, to be areas of special flood hazard. No portion of the Property lies at or below the -220 elevation contour. As discussed above, portions of the Property are located in areas designated by FEMA as Flood Zone A, but no habitable structures would be placed within Flood Zone A. As also discussed above, the FEMA map does not reflect an existing 7-foot berm along the western boundary of the Property that diverts stormwater off-site to the south and away from the southwestern corner of the solar farm complex site (AEI-CASC 2013). Section 91604.00 states that "A Development Permit shall be obtained before construction or development begins within any area of special flood hazards or areas of mudslide (i.e., mudflow) established in Section 91603.01. The solar farm complex site is not located in an area subject to mudflow. Floodplain Development Permit Applications have been submitted for consideration to the County's Floodplain Administrator for each of the five solar energy projects. These applications identify the nature, location, dimensions, and elevations of facilities associated with the solar sites, including both existing and proposed structures and drainage facilities.

Based on the proposed drainage described above, and the Project's mandatory compliance with regulations regarding hydrology and drainage at the solar farm complex site, implementation of the proposed Project would not have a substantial impact on the hydrology of the surrounding area. Peak flow runoff from the solar farm complex site would be directed to and infiltrated in designated retention basins and/or percolate into the ground, such that there would be no increase in on-site or off-site flooding potential. Therefore, on- and off-site drainage and flooding impacts would be **less than significant** during Project operations.

Reclamation

Reclamation of the solar farm complex would consist of deconstructing structures and infrastructure and backfilling and compacting the on-site retention basins. As the solar farm complex site is relatively flat, reclamation of the land to approximate existing idle farmland would not involve major topographic changes that would substantially alter off-site drainage. In addition, removal of structures associated with the proposed Project would increase the amount of pervious surface area formerly covered with solar facilities. Therefore, a **less than significant** impact would occur related to on- and off-site drainage and flooding upon reclamation of the solar farm complex site to idle farmland.

Mitigation Measures

None required.

Significance after Mitigation

Not applicable.

Result in Substantial Erosion or Siltation On- or Off-site

Impact 4.11.4 Implementation of the proposed Project could generate erosion during construction. Compliance with the provisions of the Construction General Stormwater Permit and Stormwater Pollution Prevention Plan would address erosion or siltation on- or off-site. Therefore, this impact is considered **less than significant**.

Construction

Because the Project area would require minimal earthwork associated with site preparation and installation of PV structures, the potential for erosion and sediment is limited. Soil erosion, sedimentation and pollutants in runoff (e.g. grease, oils, sediment, and heavy metals) would be controlled during construction in accordance with the Construction General Stormwater Permit, which regulates storm water discharges from construction sites that disturb one or more acres of land. A Stormwater Pollution Prevention Plan (SWPPP) would also be required and must be prepared by a Qualified SWPPP Developer (QSD) and implemented by a Qualified SWPPP Practitioner (QSP). Soil erosion and sedimentation during construction would be controlled through compliance with the SWPPP. The SWPPP must be designed to ensure that the following requirements are met:

- All pollutants and their sources (including sources of sediment associated with construction, construction site erosion, and all other activities associated with construction activity) are controlled;
- Where not otherwise required to be under a RWQCB permit, all non-storm water discharges are identified and either eliminated, controlled, or treated;
- Site BMPs are effective and result in the reduction or elimination of pollutants in storm water discharges from construction activity;
- Calculations and design details as well as BMP controls for site run-on are complete and correct, and;
- Stabilization BMPs installed to reduce or eliminate pollutants after construction is completed

Typical soil erosion and sedimentation BMPs expected to be employed in the SWPPP include, but are not limited to, straw wattles, check dams, fabric blankets, and silt fencing. BMPs proposed by the Applicant (refer to Table 2.0-6 in Section 2.0, Project Description) include allowing only trained personnel to refuel vehicles in designated areas and properly maintaining vehicles to minimize potential for leaks. These practices would help reduce likelihood for pollutants entering storm water runoff. Based on implementation of the requirements summarized above, construction of the proposed Project would result in a **less than significant impact** with regard to soil erosion, sedimentation or runoff pollutants during Project construction.

Additionally, Project construction would incorporate the application of advanced, environmentally safe, polymer emulsion dust control palliatives that produce highly effective dust control, erosion control and soil stabilization. These measures would reduce airborne dust and the mobilization of soil particles by water. The effect these materials would have on Project area hydrology would depend on the amount and method of application. It is expected that they would be applied in a manner where the solar farm complex site would maintain its permeability and infiltration so moisture from storm events could infiltrate the soil. Therefore, a **less than significant** impact would occur in regard to erosion and siltation during construction of the proposed Project.

Operation

The Project is not anticipated to degrade water quality based on the required stormwater permits as well as BMPs. The proposed Project would not generate substantial amounts of runoff. Water used for panel washing would continue to percolate through the ground as a majority of the surfaces on the solar farm complex site would remain pervious. Thus, the proposed Project would not substantially alter the existing drainage pattern of the site, substantially increase the rate of runoff, or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems. As discussed above under Construction, measures are proposed that include the application of advanced, environmentally safe, polymer emulsion dust control palliatives that produce highly effective dust

control, erosion control and soil stabilization to reduce airborne dust and the mobilization of soil particles by water. To ensure that even if the application of dust and erosion control products did result in zero permeability or infiltration into the soil, the Preliminary On-Site and Off-Site Hydrology and Flood Hazard Analysis (AEI-CASC 2013) analyzed the worst-case scenario of 100 percent runoff. Imperial County requires 100 percent retention of the runoff associated with the site assuming zero percolation into the ground. The on-site retention basins are sized to capture the stormwater as if none of it would penetrate into the ground. Consequently, any erosion associated with stormwater runoff would be captured in the on-site retention basins. Therefore, a **less than significant** impact would occur in regard to erosion and siltation during Project operations.

Reclamation

Reclamation of the solar farm complex may require use of small amounts of groundwater for dust control and equipment maintenance as a part of deconstructing structures and infrastructure and reclaiming surface soils to approximate existing idle farmland. Given that reclamation activities would occur approximately 20 to 25 years in the future, it is anticipated that these activities would be subject to mandatory compliance with standards similar to or more stringent than those currently required Therefore, upon reclamation, the Project is anticipated to have a **less than significant** impact related to erosion and siltation.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.

Result in Placement of People or Structures within an Area Subject to Flood Hazards

Impact 4.11.5 Implementation of the proposed Project would result in development within areas identified by FEMA as Flood Zone A. Project construction and operations would not result in the placement of habitable structures or people within the flood zone. Construction and operations would require the presence of construction workers and employees within Flood Zone A. Therefore, this impact is considered **potentially significant**.

Construction

Project construction would involve grading, clearing, compacting, and construction of internal roads and solar arrays within portions of the solar farm complex site located designated as Flood Zone A. These activities would be temporary in nature, would not involve the placement of habitable structures within the Flood Zone A, and would be designed and implemented in compliance with County of Imperial requirements. Further, the portion of the solar farm complex site along the western Property boundary that is currently designated as Flood Zone A is currently blocked from runoff by an existing 7-foot high berm that would remain in place and be maintained during solar farm complex construction and operation. However, solar farm complex site preparation, grading and clearing, and construction of on-site roads and solar arrays, would require the presence of construction equipment and workers within Flood Zone A. Therefore, impacts associated with placing people in a 100-year floodplain during Project construction are considered **potentially significant**.

Operation

Historic portions of San Felipe Creek that crossed the Property are within FEMA Flood Zone A (100-year flood zone). Flood Zone A is defined as those areas with a one percent annual chance of flooding (and a 26% chance of flooding over the life of a 30-year project). The remainder of the Property is within Flood Zone X (an area of moderate flood hazard, between the limits of the 100-year and 500-year floods). As discussed above, an existing 7-foot earthen berm running along the western boundary of the Property diverts flows from San Felipe Creek to the south away from the solar farm complex site.

The proposed Project does not include a residential component, so no homes would be within a 100-year flood zone. To minimize flood hazards and risk, all habitable structures would be located outside of the FEMA 100-year flood zone. In addition, all habitable structures, transformers, and switch gear would be placed on foundations raised above the projected maximum flood levels. The only project features to be constructed within Flood Zone A would be internal roads, photovoltaic modules and power inverters. The existing berms on the west and north sides of the Property which currently divert off-site flow around the Property would be maintained, but any flows which breach the berm(s) would be allowed to flow unimpeded across the solar farm complex site and under the solar panels. However, on-going maintenance of Project area access roads, berms and other non-habitable Project components would require the presence of equipment and employees within Flood Zone A. Therefore, impacts associated with placing people in a 100-year floodplain during Project operations are considered **potentially significant**.

No dams or levees are in the vicinity of the Project area, so no impact would occur with regard to exposing people or structures to a significant risk of loss, injury or death involving flooding as a result of the failure of a levee or dam (PETRA 2012a, p.8).

Therefore, based on proposed Project design and mandatory compliance with regulations, impacts associated with placing structures in a 100-year floodplain during project operations are considered **less than significant**.

Reclamation

Reclamation of the solar farm complex site would include dismantling and demolition of above-ground structures; concrete removal; removal and dismantling of underground utilities; excavation and removal of soil; and final site contour. As part of decommissioning, all solar equipment and other on-site facilities (chain link fence, gates, posts and concrete footings, solar generation facilities, electrical switchyard and substation facilities, transmission lines, control/warehouse buildings, water tanks, foundations, septic systems) would be removed. However, the IID-owned facilities (IID switchyard and 92 kV transmission line on the Property; 92 kV transmission line with underbuilt 12.5 kV distribution line; 12.5 kV distribution line system constructed on the Property; and the IID Anza Substation modifications) would not be decommissioned until IID determined that these improvements were no longer needed and could be retired and removed. The roads constructed on Lot B to access each of the parcels created under the major subdivision and all of the water wells would not be decommissioned or reclaimed. IID facilities would not be located within the 100-year floodplain and the wells and roads that would remain are not habitable structures. Reclamation of the site to approximate existing idle farmland would likewise not place any habitable structures or people within the 100-year floodplain. Therefore, upon reclamation, no structures or people would be located in the 100-year floodplain, and a **less than significant impact** related to flood zones would occur.

Mitigation Measures

MM 4.11.5 Construction and operation activities within Flood Zone A shall be halted during flash flood warnings and events or any other flooding events as predicted by local weather forecasts, the National Weather Service to which the solar farm complex site is subject. Upon notification of potential flood events in the Project vicinity, any non-stationary equipment and personnel located within Flood Zone A shall be relocated outside of the flood zone until such time as the threat of flooding has passed.

Timing/Implementation: *During potential flood events throughout Project construction and operation/Based on local weather forecasts and the National Weather Service.*

Enforcement/Monitoring: *Imperial County Department of Planning and Development Services.*

Significance After Mitigation

Implementation of mitigation measure MM 4.11.5 requires that construction and operation activities be halted during flood events, and all personnel be relocated out of the flood zone for safety purposes. Implementation of mitigation measure MM 4.11.5 would reduce potential impacts related to the presence of people within the flood zone to a level of **less than significant**.

4.11.4 CUMULATIVE SETTING, IMPACTS AND MITIGATION MEASURES

A. CUMULATIVE SETTING

The cumulative setting for groundwater resources is in the Ocotillo Valley Groundwater Basin (Groundwater Basin Number 7-25), which covers 223,000 acres (348 square miles) underlying the Clark and Ocotillo Valleys in eastern Imperial and western San Diego Counties. Water storage in the groundwater basin is approximately 6,250,000 AF. The basin is bounded by the Santa Rosa Mountains on the north and northeast, the Coyote Creek and Superstition Mountain faults on the west and south, and the Salton Sea and surface drainage divides on the east. Clark Valley drains internally toward Clark (dry) Lake and the remainder of the valley drains to the Salton Sea (DWR 2004). Cumulative projects within the groundwater basin include any existing, recently approved, proposed, and reasonably foreseeable development envisioned by the Imperial County General Plan. A list of large scale proposed, approved and reasonably foreseeable renewable energy projects is provided in Table 3.0-1 in Chapter 3.0, Introduction to the Environmental Analysis and Assumptions Used, of this Draft EIR.

The cumulative analysis for groundwater recharge is based upon the existence of Project area wells and other wells within the groundwater basin, the quantity of water pumped from these wells, and the ability for the groundwater basin to retain storage levels. In the vicinity of the Property, five wells exist to the west (Payne, Gann, Scholl, Steinruck, and Blu-In Park wells) and five wells exist to the east (two USGS test wells, Harpers well, and two Three Flags Ranch wells). The Allegretti wells are the main pumpers of the deep aquifer. Other wells that pump the deep aquifer (Payne, Gann, and Blu-In Park) pump small quantities for dust control and landscape irrigation. Historic use for the Blu-In Park well has been approximately two AF/Y. A CUP has been issued allowing for a new well on an adjacent parcel to supply up to 10 AF/Y to the 187-space Blu-In RV Park. Water use for the existing Blu-In Park well would be limited to 2 AF/Y. The Three Flags Ranch wells were pumped briefly in the mid-1980s to irrigate 1,000 to 1,200 acres of citrus. Pumping was replaced with Colorado River water from the Imperial Irrigation District (Todd 2013).

B. CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Impact to Hydrology and Water Quality

Impact 4.11.6 The proposed Project, in combination with large scale proposed, approved and reasonably foreseeable renewable energy projects in the Salton Sea watershed would contribute to the cumulative effects of changes in runoff patterns ultimately discharging to the Salton Sea, degradation of water quality, and reduction of groundwater supply. This impact is considered **less than cumulatively considerable**.

Construction

Reduction in Quantity of Runoff to the Salton Sea

As described above, surface waters in the Imperial Valley ultimately drain into the Salton Sea via the New and Alamo Rivers as well as via irrigation drains and canals. Until recently, the amount of water entering the Salton Sea was roughly balanced by the amount of water evaporating from its surface. Due to increased demand for water supplies in the region and recent IID water transfer agreements, increasing amounts of water are being consumed in Imperial Valley. In addition, water is also being transferred out of the Valley to population centers such as San Diego County, thus reducing inflows to the Salton Sea. Construction of the proposed Project would not utilize surface water, and the Project area is not served by IID irrigation drains or canals. The Project does not propose changes to San Felipe Creek or Tarantula Wash, and runoff flow through these areas would not be impeded by Project construction. Therefore, the reduction of runoff to the Salton Sea during Project construction is not expected to combine with similar impacts of large scale proposed, approved and reasonably foreseeable renewable energy projects identified in Table 3.0-1 in Chapter 3.0, Introduction to the Environmental Analysis and Assumptions Used. Likewise, cumulative impacts associated with construction-phase runoff reduction would be **less than cumulatively considerable**.

Reduction in Water Quality

Implementation of the proposed Project, along with other projects listed in Table 3.0-1 could contribute to a cumulative reduction in surface water or groundwater quality. However, nearly all agricultural cultivation at Property had ceased during or prior to 2011, thereby reducing the use of agriculture-related pesticides. Agricultural pesticide residue remains in on-site soils (in general, the pesticide residue levels typically found within agricultural soils are less than 50 percent of USEPA preliminary remediation goal) and Project construction would require minimal use of materials that could adversely affect water quality. It is anticipated that since the level of remaining pesticides is relatively low, and use of agricultural pesticides would no longer be required, remaining residue would be filtered through percolation into the ground. As all Project generated runoff would be contained on site, the Project's construction phase contribution to decreases in water quality would be **less than cumulatively considerable**.

Reduction in Groundwater Quantity

Water for Project construction would be sourced from groundwater pumped from the subterranean groundwater basin beneath the solar farm complex site, via either the existing water wells or the two new wells (#8 and #9) to be constructed. The Project area is within the Ocotillo Valley Groundwater Basin (Groundwater Basin Number 7-25), underlying the Clark and Ocotillo Valleys in eastern Imperial and western San Diego Counties. Water storage in the groundwater basin is approximately 6,250,000 AF (DWR 2004).

As discussed above, the WSA prepared for the Property indicated that the proposed pumping of 215 AF/Y would be within sustainable levels during both normal and drought conditions. The closest project identified in Table 3.0-1 is the Ocotillo Wells Solar Project located just west of the Imperial County/San Diego County line within San Diego County. However, this Project is not located within the Ocotillo Valley Groundwater Basin. No other projects were identified within the Property vicinity (Todd 2013). Further, both stormwater and excess groundwater pumped for proposed Project construction are required to be 100 percent retained on the solar farm complex site by the County of Imperial. Stormwater or any excess groundwater pumped for Project construction would percolate back into the groundwater basin. The County's 100 percent on-site retention requirement applies to all projects located or proposed within the groundwater basin. Therefore, the proposed Project's construction-phase contribution to decreases in groundwater supply would be **less than cumulatively considerable**.

Operation and Maintenance

Reduction in Quantity of Runoff to the Salton Sea

As described above, surface waters in the Imperial Valley ultimately drain into the Salton Sea via the New and Alamo Rivers as well as via irrigation drains and canals. Until recently, the amount of water entering the Salton Sea was roughly balanced by the amount of water evaporating from its surface. Due to increased demand for water supplies in the region and recent IID water transfer agreements increasing amounts of water are being consumed in Imperial Valley as well as transferred out of the Valley to population centers such as San Diego County, thus reducing inflows to the Salton Sea. Operation and maintenance of the proposed Project would not utilize surface water, and the Project area is not served by IID irrigation drains or canals. The Project does not propose changes to San Felipe Creek or Tarantula Wash, and runoff flow through these areas would not be impeded by Project operation. Therefore, reduction of runoff to the Salton Sea during Project operation is not expected to combine with similar impacts of large scale proposed, approved and reasonably foreseeable renewable energy projects identified in Table 3.0-1 in Chapter 3.0, Introduction to the Environmental Analysis and Assumptions Used. Therefore, cumulative impacts associated with runoff reduction during Project operation would be **less than cumulatively considerable**.

Reduction in Water Quality

Implementation of the proposed Project, along with other projects listed in Table 3.0-1 would contribute to a cumulative reduction in surface water or groundwater quality. However, nearly all agricultural cultivation at the Property had ceased during or prior to 2011, thereby reducing the use of agriculture related pesticides. Agricultural pesticide residue remains in on-site soils (in general, the pesticide residue levels typically found within agricultural soils are less than 50 percent of USEPA preliminary remediation goal) and Project operation and maintenance would require minimal use of materials that could adversely affect water quality. It is anticipated that since the level of remaining pesticides is relatively low, and use of agricultural pesticides would no longer be required, remaining residue would be filtered through percolation into the ground. As all Project-generated runoff would be contained on-site, the Project's contribution to decreases in water quality would be **less than cumulatively considerable** during operation.

Reduction in Groundwater Quantity

Project water would be sourced from groundwater pumped from the subterranean groundwater basin beneath the solar farm complex site, either the existing water wells or the two new wells (#8 and #9) to be constructed. The Project area is within the Ocotillo Valley Groundwater Basin (Groundwater Basin

Number 7-25), underlying the Clark and Ocotillo Valleys in eastern Imperial and western San Diego Counties. Water storage in the groundwater basin is approximately 6,250,000 AF (DWR 2004).

As discussed above, the WSA prepared for the Property indicated that the proposed pumping of 215 AF/Y would be within sustainable levels during both normal and drought conditions. The closest project identified in Table 3.0-1 is the Ocotillo Wells Solar Project located just west of the Imperial County/San Diego County line within San Diego County. However, this Project is not located within the Ocotillo Valley Groundwater Basin. No other projects were identified within the Property vicinity (Todd 2013). Further, both stormwater and excess groundwater pumped for proposed Project operation and maintenance are required to be 100 percent retained on the solar farm complex site by the County of Imperial. Stormwater or any excess groundwater pumped for Project activities would percolate back into the groundwater basin. The County's 100 percent on-site retention requirement applies to all projects located or proposed within the groundwater basin. Therefore, the proposed Project's contribution to decreases in groundwater supply would be **less than cumulatively considerable** during operation.

Reclamation

Reduction in Quantity of Runoff to the Salton Sea

Reclamation of the proposed Project would not utilize surface water, and the Project area is not served by IID irrigation drains or canals. The Project does not propose changes to San Felipe Creek or Tarantula Wash, and runoff flow through these areas would not be impeded by Project operation and maintenance. Therefore, the Project's reclamation-phase reduction of runoff to the Salton Sea is not expected to combine with similar impacts of large scale proposed, approved and reasonably foreseeable renewable energy projects identified in Table 3.0-1 in Chapter 3.0, Introduction to the Environmental Analysis and Assumptions Used. Therefore, cumulative impacts associated with runoff reduction during Project reclamation would be **less than cumulatively considerable**. Likewise, the solar farm complex site's reclaimed end state of idle farmland would not generate runoff to the Salton Sea. If the site were reestablished as active irrigated farmland, runoff flows to the Salton Sea would increase.

Reduction in Water Quality

Implementation of the proposed Project, along with other projects listed in Table 3.0-1 would contribute to a cumulative reduction in surface water or groundwater quality. However, by the time reclamation activities would occur (i.e 20 to 25 years in the future) it is anticipated any remaining agriculture related pesticides would be minimal. Further, all reclamation activities would implement appropriate BMPs and other measures consistent with applicable County and RWQCB requirements in effect at the time of reclamation. Thus, reclamation activities would result in a **less than cumulatively considerable** contribution to water quality reduction impacts. Likewise, the site's reclamation to idle farmland similar to existing conditions would not result in a reduction in water quality. However, if the reclaimed site were reestablished as active farmland, pesticide use and soil disturbance may be generated similar to levels historically occurring. Water quality would be mitigated through adherence to County and RWQCB requirements.

Reduction in Groundwater Quantity

It is anticipated that water for Project reclamation activities would be sourced from groundwater pumped from the subterranean Ocotillo Valley Groundwater Basin beneath the solar farm complex site via wells on the Property. The only nearby project identified in Table 3.0-1 is the proposed Ocotillo Wells Solar Project located just west of the Imperial County/San Diego County line within San Diego County.

However, this Project is not located within the Ocotillo Valley Groundwater Basin (Todd 2013). Stormwater or any excess groundwater pumped for reclamation activities would percolate back into the groundwater basin. Further, both stormwater and excess groundwater pumped for proposed Project reclamation activities would be required to comply with the County's 100 percent on-site retention requirement and other regulatory requirements applicable at the time of reclamation. Therefore, the proposed Project's reclamation-phase contribution to decreases in groundwater supply would be **less than cumulatively considerable**. However, if the reclaimed site were reestablished as active farmland, groundwater use may be generated similar to levels historically occurring. Groundwater supply would be mitigated through adherence to applicable IID, County and RWQCB requirements.

Mitigation Measures

None required.

Significance After Mitigation

Not applicable.