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Water Supply Assessment for the Seville 4 Solar Project, Imperial County, California

MARCH 2025

PREPARED FOR

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PREPARED BY

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**WATER SUPPLY ASSESSMENT FOR THE
SEVILLE 4 SOLAR PROJECT,
IMPERIAL COUNTY, CALIFORNIA**

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EXECUTIVE SUMMARY

California Senate Bill (SB) 610 and SB 221 amended the California Water Code (CWC) to stipulate that projects subject to the California Environmental Quality Act require preparation of a water supply assessment (WSA) for industrial facilities occupying more than 40 acres of land (CWC Section 10912(a)). The Seville 4 Solar Project (project) consists of approximately 339 acres; therefore, this WSA has been prepared. The steps followed to ensure compliance of this WSA with the CWC are described in Appendix A and based on the California Department of Water Resources (DWR) Guidebook for Implementation of SB 1610 and SB 221 (DWR 2003).

The project is planned for up to 18 months of construction. The project would use water supplied by existing and proposed on-site wells. During the construction period, the project would use up to approximately 112.5 acre-feet (af) of water for construction activities, including 75 af during the first year (12 months), and an additional 37.5 af during the last 6 months of construction. Post-construction operational water demands, which include system washing and operation of the proposed on-site facilities, would total approximately 7.5 af per year. Finally, the project will use an estimated 112.5 af for the project decommissioning phase (over a duration of approximately 18 months). In total, water use for the proposed project is approximately 401.3 af, including water used during project construction, facility operation, and decommissioning.

The primary purpose of a WSA is to determine whether there is sufficient water supply to meet the demands of the project and future water demands within the project area under normal and dry hydrologic conditions for a 20-year projection. Water supply availability projections indicate that sufficient water supplies are available to meet the projected water demand.

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ABBREVIATIONS

AC	alternating current
af	acre-feet
afy	acre-feet per year
Apex Energy	Apex Energy Solutions, LLC
APN	Assessor's Parcel Number
BESS	battery energy storage system
CEQA	California Environmental Quality Act
CWC	California Water Code
DC	direct current
DWR	California Department of Water Resources
Guidebook	Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001
mg/L	milligrams per liter
MW	megawatt
project	Seville 4 Solar Project
PV	photovoltaic
RV	recreational vehicle
SB	Senate Bill
SGMA	Sustainable Groundwater Management Act of 2014
SR	State Route
SWCA	SWCA Environmental Consultants
TDS	total dissolved solids
WSA	Water Supply Assessment

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1 INTRODUCTION

This Water Supply Assessment Technical Report was prepared by SWCA Environmental Consultants (SWCA) in support of the Seville 4 Solar Project (project). SWCA was retained by Apex Energy Solutions, LLC (Apex Energy), to conduct field and desktop studies to provide the technical basis for the assessment of potential impacts to water resources that may result from implementation of the project. In addition to a description of the existing conditions, this report describes how water resources will be potentially affected by the construction, operation, and maintenance of the project. This report may be used to support the environmental documentation and evaluation of the project pursuant to the California Environmental Quality Act (CEQA).

In 2001, California adopted Senate Bill (SB) 610 and SB 221, amending the California Water Code (CWC) to require that certain types of development projects provide detailed assessments of water supply availability and reliability to county and city decision-makers prior to project approval. A project that is subject to the CEQA requires preparation of a Water Supply Assessment (WSA) if it is a proposed industrial facility occupying more than 40 acres of land (CWC Section 10912(a)). WSAs identify the water supply for a described project over a 20-year projection under varying climatic conditions. The primary purpose of these requirements is to promote collaborative planning between local water supply and land use decisions. Because the language of SB 610 is unclear on whether renewable energy projects meet the definition of a “project,” this WSA takes a conservative approach and considers renewable energy projects to be subject to the requirements of SB 610.

In accordance with the CWC, a WSA must examine the availability of an identified water supply under normal-year (no drought), single-dry-year (limited drought), and multiple-dry-year (extended drought) conditions, over a 20-year projection. The WSA must account for the projected water demand of the project in addition to other existing and planned future uses of the identified water supply, including agricultural and manufacturing uses, to the extent that information is available. A common lack of data for groundwater usage and replenishment rates often makes it difficult to estimate baseline conditions regarding water supply availability; therefore, where data are not available to make quantitative estimates of water supply, reasonable assumptions are made based on available information and data.

Water requirements associated project are described in Section 4 (Project Water Demand) and potential water sources for the project are evaluated in Section 5 (Impact Analysis). The steps followed to ensure compliance of this WSA with the CWC are described in Appendix A and based on the California Department of Water Resources (DWR) Guidebook for Implementation of SB 1610 and SB 221 of 2001 (DWR 2003).

2 PROJECT LOCATION

Apex Energy proposes to construct a 90-megawatt (MW) solar facility with a 180-MW battery energy storage system (BESS) on approximately 339 acres located in unincorporated Imperial County, California (Figure 1). The proposed project area is just south of State Route (SR) 78, approximately 7 miles east of Ocotillo Wells, and approximately 9 miles west of SR 86. The project area is also approximately 14 miles from the southern tip of the Salton Sea and 4 miles east of the Imperial County–San Diego County line.

The project area is partially situated on San Felipe Creek, and the general surrounding area is either vacant land consisting of sand dunes and local washes or developed solar fields. The proposed Seville 5 Solar project is immediately to the north, on currently vacant land. Developed portions of Seville 1 and Seville 2 Solar facilities are located immediately to the east of the project, and the Titan 1 Solar facility is located to the southeast. An existing switching station for Titan 1 solar is located along the northeast side

of the proposed Seville 4 project, which will serve as the point of interconnection for the Seville 5 project. Vacant land and San Felipe Creek are to the south, with the Ocotillo Recreational Vehicle (RV) Resort approximately 0.5 mile northwest. The project area exhibits a generally planar and flat-lying topography, which can be partially attributed to previous agricultural activities that included in-filling the former creek bottom of San Felipe Creek. The project is located on eight privately-owned parcels, Imperial County Assessor's Parcel Numbers (APNs) 018-170-058, -059, -060, -061, -062, -063, -064, -065.

The project area is in Sections 15 and 22, Township 12 South, Range 9 East, as depicted on the U.S. Geological Survey Borrego Mountain SE, California, 7.5-minute quadrangle (Figures 1 and 2).

3 PROJECT DESCRIPTION

Apex Energy proposes improvements for the 90-MW solar project that will consist of solar photovoltaic (PV) arrays, inverter transformer stations, a 180-MW battery energy storage system, numerous underground cable raceways, a substation, maintenance access roads, and maintenance buildings. The project proposes to use solar PV technology modules mounted on horizontal single-axis tracker systems. The fixed-frame PV module arrays would be mounted on racks that would be supported by driven piles, arranged in arrays spaced up to 30 feet apart (pile to pile) to maximize performance and to allow access for panel cleaning. Solar modules would be a maximum of 10 feet high. These arrays would be separated from each other and the perimeter security fence by at least 20-foot-wide interior roads to provide access to all areas for maintenance and emergency vehicles.

Electricity generated by the PV modules would be collected by a direct current (DC) collection system routed underground in trenches. This DC power would be delivered to pad-mounted inverters in weatherproof enclosures located within the arrays. Underground or overhead collection lines would transmit electricity to the new on-site Seville 4 substation, proposed to be located on the southeastern corner of APN 018-170-064. From the Seville 4 substation, the project would connect to a 92-kilovolt generation tie line on the eastern boundary that extends east to a substation within the Titan Solar project.

The proposed BESS will be constructed adjacent to the project's solar facilities and will consist of either lithium ion or flow batteries. Underground trenches with conduits would be used to connect the batteries to the control and monitoring systems, and inverters would be used to convert the PV-produced DC power to alternating current (AC) power.

Due to the relatively flat-lying topography, project area grading is expected to entail minor cuts and fills to provide access roads, drainage, and building sites for structures. An estimated 90% of ground disturbance would consist of excavation and post installation, as well as trenching for underground utilities and drainage culverts performed using mechanical methods. The remaining 10% of ground disturbance would be caused by overland travel for improvements and maintenance of solar panel blocks with solar PV arrays and various inverter transformer stations.

All proposed treatment areas, including roads, trails, access roads, and staging areas, are on previously disturbed soils. Ground disturbance is not anticipated to exceed a depth of 8 feet by vibratory pile hammer and is not anticipated to exceed 48 inches for trenching for underground utilities and would be a result of heavy equipment use. The project lifespan is 20 to 25 years.

Buffer zones will be established around all biologically and culturally sensitive resources, as necessary. In addition, a 50-foot-wide buffer will be established around all streams and floodplains.

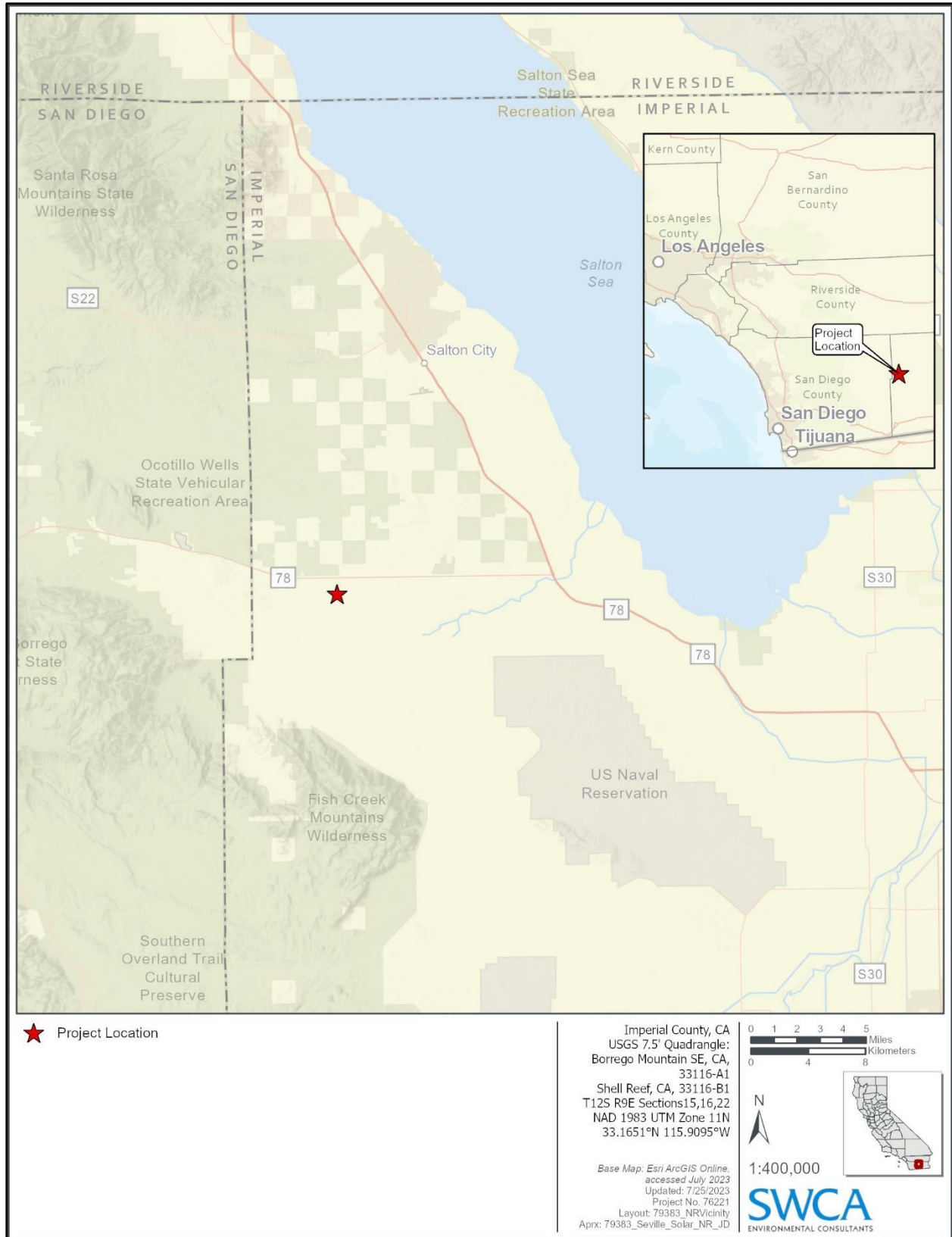


Figure 1. Project vicinity map.

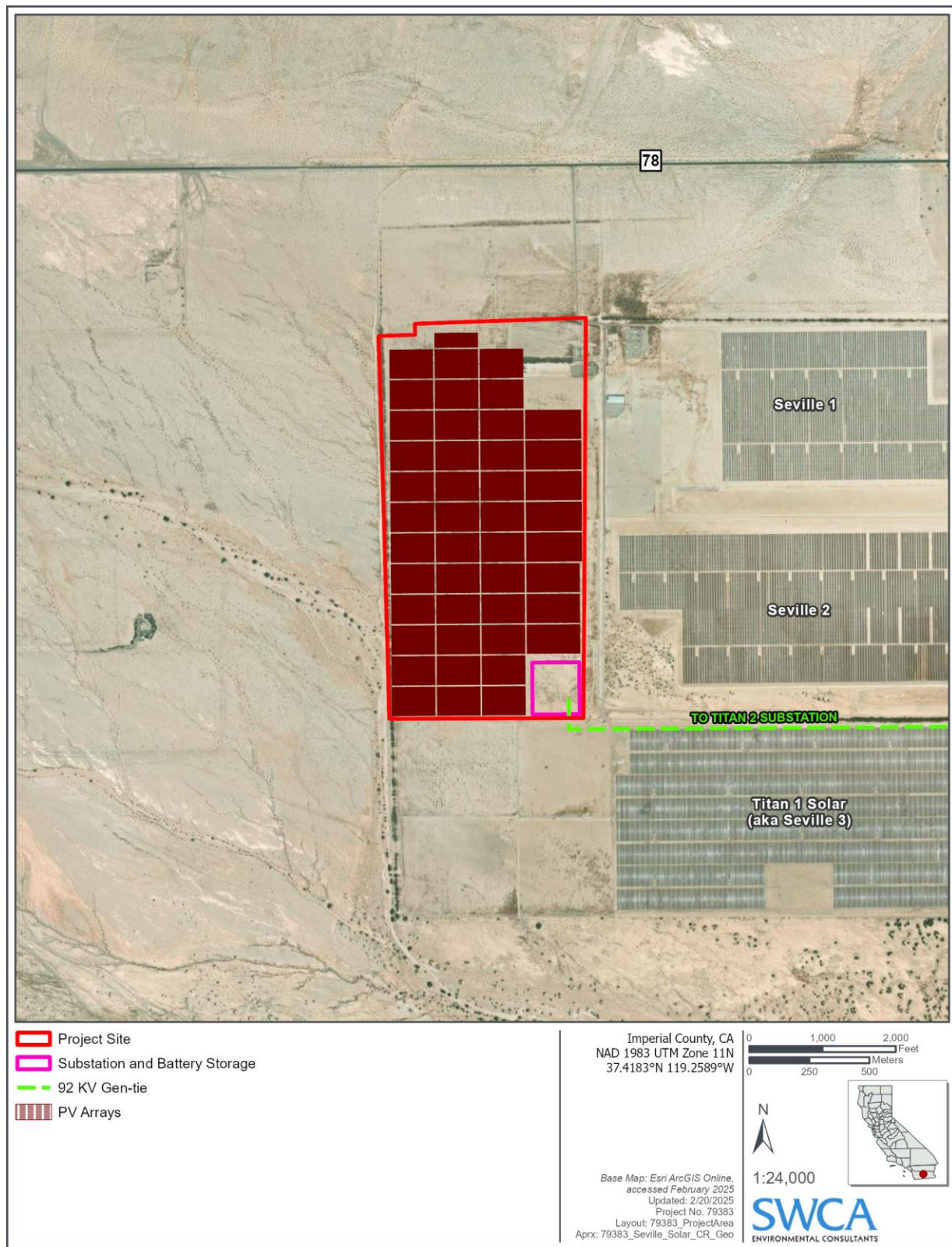


Figure 2. Project setting map.

3.1 Ocotillo-Clark Valley Groundwater Basin

Groundwater supply is available from the Ocotillo-Clark Valley Groundwater Basin (Basin Number 7-25) (Figure 3). The basin is bounded by the Santa Rosa Mountains to the north and northeast, Coyote Creek and Superstition Mountain faults to the west and south, and the Salton Sea and surface drainage divides to the east. Clark Valley (to the northwest) drains toward Clark Lake (which is dry), whereas the rest of the area drains toward the Salton Sea. The basin is an alluvial-filled valley of stream, alluvial fan, lake, and aeolian deposits (DWR 2004). Recharge is from mountain runoff in the north and east, estimated to be 1,200 acre-feet per year (afy) for the Clark Valley portion of the basin and 1,100 afy for the Ocotillo Valley portion of the basin (DWR 2004). Groundwater generally flows southeastward. The Ocotillo-Clark Valley Groundwater Basin has not been adjudicated. The groundwater storage capacity estimated for Clark Valley is about 450,000 acre-feet (af), and the capacity estimated for Ocotillo Valley is about 5,800,000 af. These estimates add to about 6,250,000 af (DWR 2004).

A shallow aquifer and a deep aquifer are in the vicinity of the project area. Water levels in the shallow aquifer are about 100 feet higher than the deep aquifer, and total dissolved solids (TDS) concentrations are about three to four times greater in the shallow aquifer. The shallow aquifer is unconfined and appears to feed the San Felipe Creek and Fish Creek springs located southeast of the property (see Figure 3) (Krieger & Stewart Inc. 1995). The deep aquifer is at least partially confined. 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 Engineers 2013).

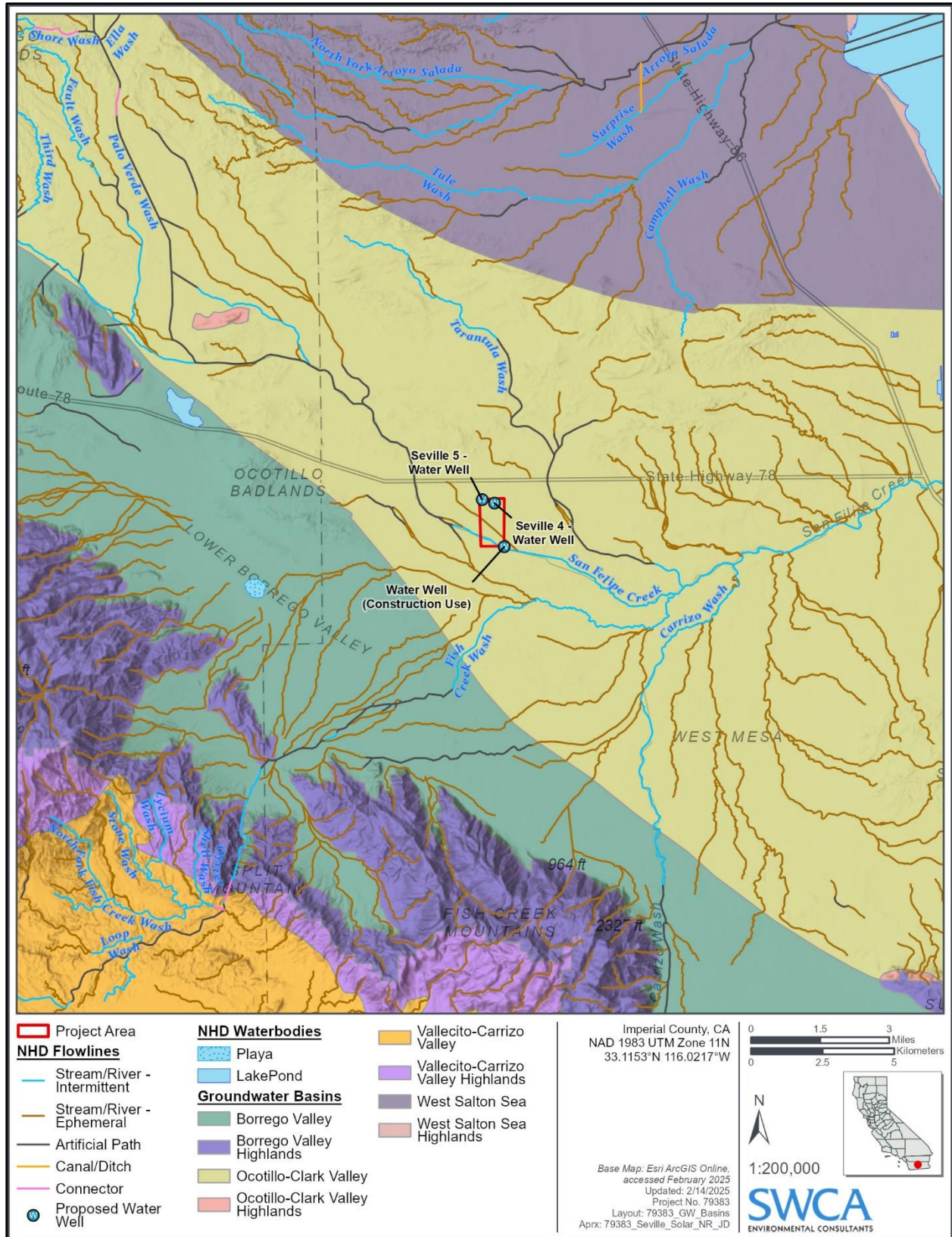


Figure 3. Project area and aquatic features including groundwater basin.

3.1.1 Water Quality

In the groundwater near Clark Lake, in the northern part of the basin, the dominant cation is sodium or calcium, and the dominant anions are sulfate and chloride. TDS content ranges from 560 to 1,983 milligrams per liter (mg/L) and averages about 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 about 2,500 mg/L. TDS content often increases over time for wells with multiple measurements and increases from northwest to southeast in the basin (DWR 2004).

3.2 Climate

The area has a warm, dry desert climate, with extremely hot and dry summers and temperate winters. It receives little rainfall. The climatic records for Ocotillo Wells, California, in Imperial County, California (Cooperative Observer Program Station No. 046383), indicate that the project area has an average annual maximum temperature of 89.5 degrees Fahrenheit. The average annual rainfall in the project area is 2.37 inches, most of which occurs between December and January (Western Regional Climate Center 2023).

3.3 Local Groundwater and Land Use

The project area is in a desert environment, with few population centers nearby. The closest rural community is Ocotillo Wells, which is about 7 miles to the west along SR 78. The Ocotillo Wells State Vehicular Recreation area is to the north. The project area is nearby what has historically been agricultural property. Agriculture peaked in the mid- to late 1970s, with 1,700 acres farmed in 1978. From 1983 to 2009, up to about 1,024 acres were farmed, although no farming reportedly occurred in 1990. Only 80 acres were farmed in 2010 and 2011 (Todd Engineers 2013).

According to the 2013 WSA developed for the initial Seville Solar Farm Complex, adjacent to the currently proposed areas, five wells exist to the west (Payne, Gann, Scholl, Steinruck, and Blu-In Park wells) and five wells exist to the east (two U.S. Geological Survey test wells, Harpers well, and two Three Flags Ranch wells) (Todd Engineers 2013). Additionally, the 2013 WSA estimated a total of 190 afy for its operational water use needs.

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 about 2 afy. A conditional use permit has been issued allowing for a new well on an adjacent parcel to supply up to 10 afy to the 187-space Blu-In RV Park. Groundwater levels in the aquifer declined about 163 feet between 1953 and 2001 (Todd Engineers 2013).

3.4 Water Supply Assessment Applicability and Regulatory Framework

3.4.1 Water Supply Assessment Applicability

A project that is subject to CEQA requires preparation of a WSA if it is a proposed industrial facility occupying more than 40 acres of land (CWC Section 10912(a)). Since the proposed project is an industrial power generation facility covering approximately 595 acres, preparation of a WSA is required.

SB 610 amended CWC Sections 10910 and 10912 to create a direct relationship between water supply and land use. Based on this amendment to the CWC, the proposed project is subject to SB 610 and

therefore requires the preparation of a WSA. The CWC, as amended by SB 610, requires that a WSA address the following questions:

- Is there a public water system that will service the project?
 - A public water system does not serve the project area.
- Is there a current UWMP [urban water management plan] that accounts for the project demand?
 - A UWMP does not exist for the property or proposed project.
- Is groundwater a component of the supplies for the project?
 - A groundwater assessment has been prepared in this WSA and has been used by Apex Energy to determine that on-site groundwater will be developed for use on this project.

The primary question to be answered in a WSA in accordance with the requirements of SB 610 is:

- Will the total projected water supply available during normal, single-dry, and multiple-dry water years during a 20-year projection meet the projected water demand of the proposed project, in addition to existing and planned future uses of the identified water supply, including agricultural and manufacturing uses?
 - The various projections, planned project water demand, and future water availability are discussed in Section 4 (Project Water Demand) and Section 5 (Impact Analysis).

3.4.2 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act of 2014 (SGMA) created a framework to promote the sustainable management of groundwater resources by local agencies. It creates requirements applicable to groundwater basins that have been designated as high- or medium-priority by the DWR under California Water Code Section 10933. Basin prioritization is based on the best available socioeconomic and hydrological data, such as population, number of wells, and irrigated acres. The majority of subbasins within the project area are designated by the SGMA as “low and very low priority” basins. In general, factors that influence basin priority designations within the project area remain low, such as urban development, well development, and groundwater reliance. The basin's priority designation under SGMA may not provide a comprehensive depiction of the hydrologic conditions or groundwater resources underlying the project's water supply well, particularly due to limited data and development within the region.

The SGMA addresses the depletion of groundwater resources by mandating the formation of groundwater sustainability agencies tasked with developing and implementing groundwater sustainability plans tailored to local basins. These plans outline strategies, such as recharge and demand management, to achieve sustainability within 20 years, guided by set goals and criteria. The framework outlined by the SGMA does not apply to the proposed project because the proposed project is underlain by the Ocotillo-Clark Valley Groundwater Basin, a subbasin designated as low priority by the DWR (DWR 2014).

According to the DWR, there are currently 26 wells within the basin and 7,947 irrigated acres, representing approximately 3.6% of the total basin area.

4 PROJECT WATER DEMAND

The proposed project would require 112.5 af of water to support construction for up to 18 months (Table 1). Thereafter, the project would require up to 7.5 afy to support operation and maintenance activities. The water demands for each phase of the proposed project are described in detail in Section 4.1

(Construction Water Demand) and Section 4.2 (Operation and Maintenance Water Demand). Table 1 provides an estimate of project water demands. Table 2 provides the cumulative water demand over the entire life of the proposed project. The project would use water supplied by existing and proposed on-site wells (Figure 4).

Table 1. Summary of Project Water Demands

Project Phase	% of Demand	Water Demand (gallons)	Water Demand (af)
18-month Construction Water Demand			
Dust control	85%	31,282,000	96.0
Initial system demand	10%	3,683,000	11.3
Personnel	5%	1,695,000	5.2
Total		36,660,000	Up to 112.5 af
Annual Operation Demand			
System wash water	50%	1,222,000	3.8
Process water	5%	122,200	0.4
Facilities (potable and non-potable)	25%	611,000	1.9
Landscape irrigation	10%	244,400	0.7
Fire suppression	10%	244,400	0.7
Total		2,444,000	Up to 7.5 af

Table 2. Project Water Use Projections

Project Water Use Projection (af)												
Year	18-month Construction		2.5	3	4	5	6	7	8	9	10	11
Water use	112.5		3.8	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Total (cumulative)	112.5		116.3	123.8	131.3	138.8	146.3	153.8	161.3	168.8	176.3	183.8
Year	12	13	14	15	16	17	18	19	20	21	22	23
Water use	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Total (cumulative)	191.3	198.8	206.3	213.8	221.3	228.8	236.3	243.8	251.3	258.8	266.3	273.8
Year	24	25	18-month Decommissioning									
Water Use	7.5	7.5	112.5									
Total (cumulative)	281.3	288.8	401.3									

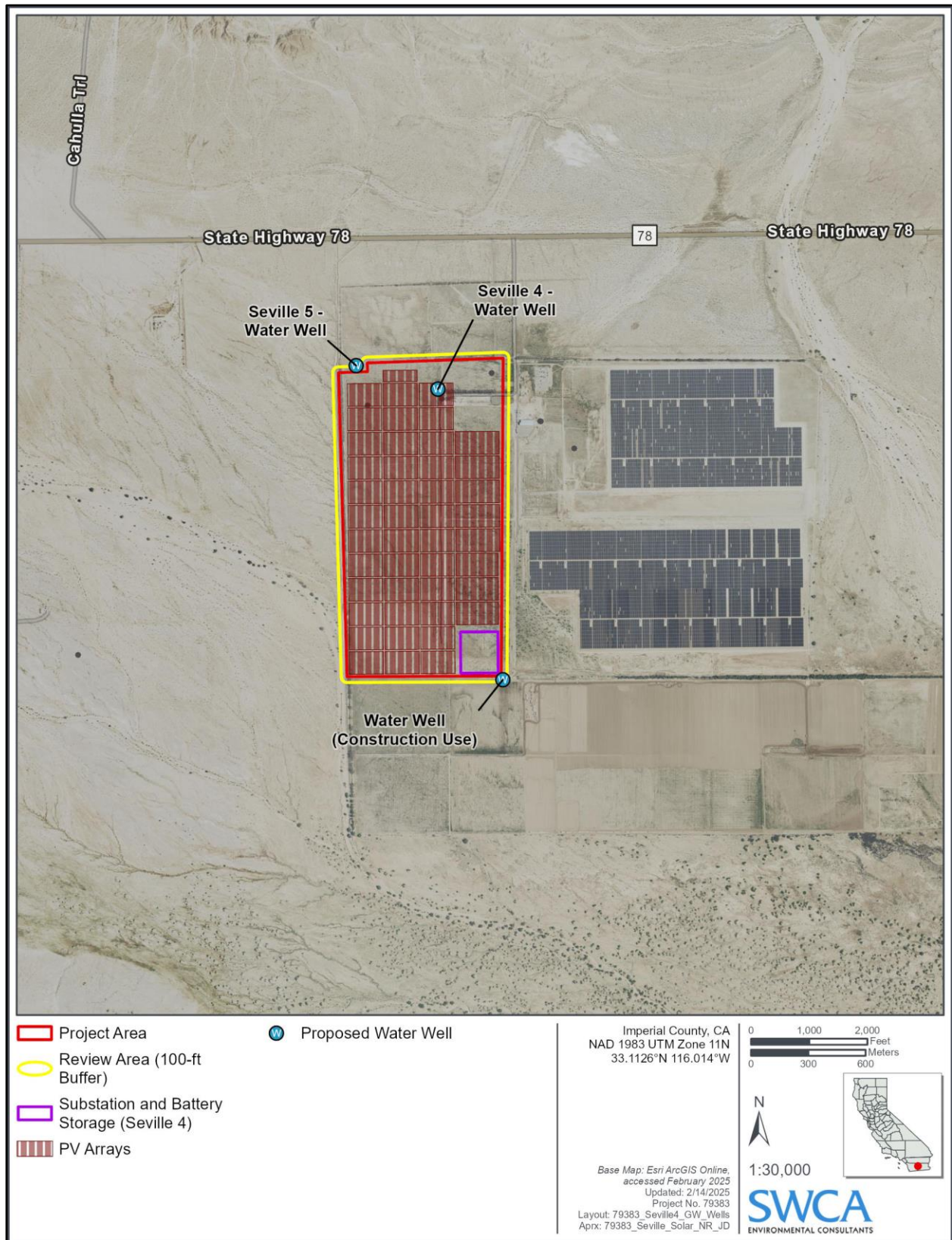


Figure 4. Project proposed water sources map.

4.1 Construction Water Demand

Project construction will use water sourced from the three client-owned wells within the project area (see Figure 4). During the 18-month construction period, it is estimated that the project would require up to 36,660,000 gallons (112.5 af) of water. This water would be used for common construction-related activities, including dust control, sanitation, initial system demand, and other miscellaneous purposes (see Table 1).

4.2 Operation and Maintenance Water Demand

Project operation and maintenance water demands will use water sourced from the three client-owned wells within the project area. During the 25-year operating period it is estimated that the project would require up to 2,444,000 gallons (7.5 af) of water annually. Operational water use will primarily include periodic washing of the PV modules, which is expected to occur twice per year to remove dust and maintain power generation efficiency. Washing would be done using a truck-mounted pressure washer and would require approximately 3.8 af (1,222,000 gallons) of water per year (see Table 1).

4.2.1 On-Site Facilities Water

For process water, the solar collector would require an estimated 0.4 af (122,200 gallons) of water per year. Other potable and non-potable facility uses would require an estimated 1.9 af (611,000 gallons) of water per year.

4.2.2 Landscape Irrigation and Fire Suppression

Limited landscape irrigation would be required at an estimated 0.7 af (244,400 gallons) of water per year. Fire suppression is estimated at 0.7 af (244,400 gallons) of water per year.

5 IMPACT ANALYSIS

5.1 Water Supply Sources

The project would source water from groundwater from private wells. The water rights for these wells are owned by Apex Energy. The project area is within the Colorado River Basin and the Salton Sea Transboundary Watershed (California Department of Parks and Recreation 2013). There are no plans to use additional water supply sources. Three groundwater wells will be used for the construction, operations, and decommissioning for the Seville 4 project (see Figure 4). An existing well in the southeast corner of the project area will be used for construction supply needs. Two additional wells on the northwest edge of the project area and on the northern, centermost portion of the project area will be used.

5.2 Water Availability and Drawdown

This section assesses project and non-project water needs over a 20-year future projection to determine whether there are sufficient supplies to serve the project over the next 20 years. The assessment considers normal year (no drought), single-dry-year (limited drought), and multiple-dry-year (extended drought) conditions. A multiple-dry-year scenario is assumed to be 3 years long for the purpose of this analysis.

Project water demand for a projected 25-year period plus an 18-month decommissioning period is summarized in Table 2. Project water demand would be greatest during the 12- to 18-month construction and decommissioning periods. After construction, the 25-year operational period following the initiation of construction, and decommissioning, total project water use would be approximately 401.3 af.

5.2.1 *Normal Year (No Drought)*

Rainfall data for the years 1895 through 2022 were analyzed to determine single-dry-year and multiple-dry-year precipitation based on modeled data within the project vicinity (approximately 6.9 miles northwest of the project area)¹ (PRISM Climate Group 2023). The amount of mountain-front recharge within the basin is approximately 1,100 afy (DWR 2004). Rainfall data for the years 1895 through 2022 were analyzed to determine single-dry-year and multiple-dry-year precipitation based on modeled data in the project vicinity (PRISM Climate Group 2023). The average annual precipitation for the most recent 40-year period of record (1983–2022) is 3.24 inches. The amount of mountain-front recharge within the basin is approximately 1,100 afy (DWR 2004). For the purposes of this analysis, this amount of recharge is assumed to derive from the normal year conditions of 3.24 inches.

5.2.2 *Single Dry Year (Limited Drought)*

A probability-based estimate is used to determine water availability during a single dry year. Single-dry-year rainfall is estimated as a year with a 10% probability of occurrence, meaning that 10% of the years would be drier (DWR 2003). The predicted rainfall for a single dry year is 1.23 inches, or 37% of normal-year rainfall within the project vicinity. A single dry year would not affect the safe yield of the basin. The aquifer would be expected to rebound following a single dry year when precipitation-based recharge is restored to the Ocotillo-Clark Valley Groundwater basin.

5.2.3 *Multiple Dry Years (Extended Drought)*

A multiple-dry-year scenario is estimated using modeled precipitation data from PRISM Climate Group. Rainfall is estimated for the driest 3-year period on record (DWR 2003). According to PRISM Climate Group data for the project area, the 2000 to 2003 water years represent the driest 3-year period on record for which there are complete data.² Between 2000 and 2003 precipitation within the project vicinity was measured as follows:

- Year 1: 1.49 inches (2000–2001 water year)
- Year 2: 1.91 inches (2001–2002 water year)
- Year 3: 0.68 inch (2002–2003 water year)

The Year 1, Year 2, and Year 3 precipitation values represent 46%, 59%, and 21% of the average annual rainfall, respectively. Taken as a whole, this 3-year period resulted in a total of 4.08 inches of precipitation, compared to 9.72 inches during a normal period consisting of three average years, or 42% of normal.

¹ Groundwater recharge to the basin is likely derived from percolation of runoff from mountains adjacent to the valley (DWR 2004). Precipitation data were therefore selected for a location just west of the project area. Rainfall at this location was estimated to be representative of recharge rate for the basin, based on proximity to elevation.

² There is an additional 3-year consecutive period of driest years, from 1954 to 1957; however, the modeled data for 1956 is missing, consequently skewing the mean. Missing data may result from lack of input data for that date.

5.2.4 Basin Supply and Demand During Single and Multiple Dry Years

5.2.4.1 BASIN SUPPLY

Precipitation recharge in the subbasin during normal years, single dry years, and multiple dry years is summarized in Table 3. Under a single-dry-year scenario, the basin would be expected to have approximately 62% less recharge than during a normal water year. Under multiple-dry-year conditions, the Ocotillo-Clark Valley Groundwater Basin aquifer would have an average of 58% less recharge (over the 3-year period) than during normal water years.

Table 3. Precipitation Recharge to Ocotillo-Clark Valley Groundwater Basin Aquifer

Climate Scenario	Precipitation Recharge (afy)	Precipitation Recharge (inches)	Percentage of Normal Year
Normal year*	1,100	3.24	100%
Single dry year†	418	1.23	38%
Multiple Dry Years‡			
Year 1	506	1.49	46%
Year 2	649	1.91	59%
Year 3	231	0.68	21%

* Normal water year precipitation recharge is based on the 40-year average rainfall between 1983 and 2022 (PRISM Climate Group 2023).

† Single-dry-year precipitation recharge is scaled from the annual average water year for 1989 for rainfall data from within the project vicinity (PRISM Climate Group 2023).

‡ Multiple-dry-year precipitation recharge is scaled from the 3-year period between 2000 and 2003 for rainfall data from within the project vicinity (PRISM Climate Group 2023).

5.2.4.2 BASIN DEMAND

Table 4 presents projections for the first 12 months of the construction period with the highest project-related annual water use (75 af). Table 5 presents projections for the operational period of the proposed project. The existing pumping data refer to the estimated pumping rate for the wells associated with the project area in Section 3.3 (Local Groundwater and Land Use). It was assumed for the purpose of this analysis that reasonably foreseeable water use within the vicinity of the proposed project would include the water demand associated with the project, which requires the same water demand as Seville 5. No additional water demand within the basin has been identified.

Table 4. Groundwater Availability Projections for the First 12 Months of Construction

Climate Scenario	Precipitation Recharge (afy)	Existing Pumping (afy)	Project Pumping (afy)*	Reasonably Foreseeable Pumping in Project Vicinity (afy)†	Total Demand (afy)	Balance (afy)
Normal year	1,100	202‡	75	75	352	748
Single dry year	418	202	75	75	352	66

Climate Scenario	Precipitation Recharge (afy)	Existing Pumping (afy)	Project Pumping (afy)*	Reasonably Foreseeable Pumping in Project Vicinity (afy)†	Total Demand (afy)	Balance (afy)
Multiple Dry Years						
Year 1	506	202	75	75	352	154
Year 2	649	202	75	75	352	297
Year 3	231	202	75	75	352	-121
Multiple-Dry-Year Balance						330

* Herein, it is assumed that all project construction would happen within 18 months; however, this value represents the water use for the first 12 months of construction to align with annual water balance estimates during single- and multiple-dry-year scenarios.

† This value represents the water demand for the proposed Seville 4 Solar Project, which is located immediately south of the proposed Seville 5 Solar Project.

‡ This accounts for existing groundwater wells for the initial Seville Solar project area, lots 1–8, and local water use described in Section 3.3 (Local Groundwater and Land Use).

Table 5. Groundwater Availability Projections for Operations and Maintenance (Years 2.5–25)

Climate Scenario	Precipitation Recharge (afy)	Existing Pumping (afy)	Project Pumping (afy)	Reasonably Foreseeable Pumping in Project Vicinity (afy)*	Total Demand (afy)	Balance (afy)
Normal year	1,100	202†	7.5	7.5	217	883
Single dry year	418	202	7.5	7.5	217	201
Multiple Dry Years						
Year 1	506	202	7.5	7.5	217	289
Year 2	649	202	7.5	7.5	217	432
Year 3	231	202	7.5	7.5	217	14
Multiple-Dry-Year Balance						735

*This value represents the water demand for the proposed Seville 4 Solar Project, which is within located immediately south of the proposed Seville 5 Solar Project.

† This accounts for existing groundwater wells for the initial Seville Solar project area, lots 1–8, and local water use described in Section 3.3 (Local Groundwater and Land Use).

5.2.5 **Potential Drawdown**

Limited data on basin conditions are available to conduct a comprehensive impact analysis of the proposed project's water demand on the underlying aquifer. In this section, data from the DWR Bulletin 118 report for the Ocotillo-Clark Valley Groundwater Basin (DWR 2004) were used to model various project impact scenarios on aquifer storage drawdown.

The Ocotillo-Clark Valley Groundwater Basin has a surface area of approximately 223,000 acres, and an estimated aquifer storage capacity of 6,250,000 af. Specific yield is the portion of groundwater that an unconfined aquifer, such as the Ocotillo-Clark Valley Groundwater Basin (Imperial County Planning & Development Services 2021), can release due to gravity drainage. It represents the usable water available for pumping and is estimated to be around 25% in neighboring aquifers (DWR 2004).

1) **Drawdown**

- a. Equation:

$$\text{Drawdown (feet)} = \frac{\text{Volume Pumped (af)}}{\text{Basin area (acres)}}$$

- b. **Scenario 1:** Assuming an unrealistic scenario in which 401.3 af (the total project water demand) is pumped from the basin, with no source of recharge, the drawdown would approximate 0.0018 feet, or 0.02 inch.
- c. **Scenario 2:** The annual maximum water demand for the proposed project should not exceed 75 af, which would occur during the first 12 months of construction and during the first 12 months of decommissioning. Assuming an unrealistic scenario in which 75 af is pumped from the basin, with no source of recharge, the drawdown would approximate be 0.00034 feet, or 0.0040 inch.

2) **Average depth**

- a. Equation:

$$\text{Average Depth (feet)} = \frac{\text{Storage capacity (af)}}{\text{Basin area (acres)}}$$

- b. The average thickness of the basin is approximately 28 feet. Data on the saturated thickness of the aquifer is not available; therefore, herein, a “half-full” assumption was used for the aquifer to determine drawdown scenarios in a scenario in which the aquifer is at half its storage capacity. To do that, the average thickness is divided by two, which is 14 feet.

3) **Total volume of water within the aquifer (available water for pumping)**

- a. Equation:

$$V = A \times b \times Sy$$

Where: V = Volume of available water stored within the aquifer (af)

A = Area of the aquifer (acres)

b = Saturated thickness of the aquifer (feet)

Sy = Specific yield

- b. The total volume of available water (in af) found within the Ocotillo-Clark Valley Groundwater Basin in a “half-full” scenario is as follows:

i. $V = 223,000 \text{ (acres)} \times 14 \text{ (feet)} \times 0.25 \text{ (dimensionless)}$

ii. $V = 780,500 \text{ af}$

4) Percentage used out of total available storage

- a. Equation:

$$\text{Percent Usage} = \frac{\text{Quantity used (af)}}{\text{Quantity available (af)}} \times 100$$

- b. **Scenario 1:** The project’s water use of 401.3 af could result in using approximately 0.051% of the stored water within the Ocotillo-Clark Valley Groundwater Basin over the course of the project life; however, this assumes that the basin exists within a static state, receiving no recharge or discharge. Additionally, this assumes that the entirety of the project water supply is pumped all at once.
- c. **Scenario 2:** The annual maximum water demand for the proposed project should not exceed 75 afy, which would occur during the first 12 months of construction and during the first 12 months of decommissioning. If this amount were withdrawn from the aquifer, this would result in less than 0.010% of the stored water volume within the Ocotillo-Clark Valley Groundwater Basin being used. Scenario 2 operates under the same conditions as Scenario 1.

6 CONCLUSION

This WSA assesses the project’s construction, operation, and decommissioning water demands. During the construction period of up to 18 months, the project would use up to approximately 112.5 af of water. Operational water demands, which include system washing and operation of the proposed on-site facilities, would total approximately 7.5 afy. Decommissioning is assumed to have the same duration and water use as the construction period. The Ocotillo-Clark Valley Groundwater Basin has a recharge rate of 1,100 afy, and the project demand has a projected peak demand of up to 75 afy for construction purposes and 7.5 afy for operational purposes. The net water balance supply for normal, single dry, and multiple dry years is sufficient to meet project purposes.

Single- and Multiple-Dry-Year Scenarios

Herein, it was determined that the basin would not be significantly impacted during one single dry year and would likely restore following a year of average to above-average precipitation-based recharge.

Under multiple-dry-year conditions, the Ocotillo-Clark Valley Groundwater Basin aquifer would have an average of 58% less recharge (over the 3-year period) than during normal water years. With the maximum 3-year project water demand comprising 18 months of construction (112.5 af) and a remaining water demand of up to 11.3 af (18 months of operational demand), the project would have a net positive balance with predicted multiple-dry-year recharge rates.

Basin Drawdown and Storage Reduction Scenarios

Herein, it was determined that the maximum possible drawdown within the basin would be 0.02 inch, assuming the entire project water volume was drawn with no recharge. Similarly, it was determined that if the entire project water volume was withdrawn from the aquifer, this could result in a storage reduction of 0.05%, assuming the aquifer was currently at half its total capacity.

The project would source its water supply from on-site groundwater wells. Water demand projections in the project area generally account for solar energy developments, such as the project. Further, water supply availability projections generally indicate that sufficient water supplies are available to meet projected water demands for the project.

Additionally, the proposed project resides within the Ocotillo-Clark Valley Groundwater Basin, a basin designated as very low priority by the DWR; however, this designation reflects a lack of socioeconomic development within the basin area and not the groundwater conditions, per se.

In conclusion, long-term water demands associated with the project appear to be accounted for; although regional water shortages may occur in the area during the project's lifetime, such conditions may occur regardless of the proposed solar development.

7 LITERATURE CITED

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APPENDIX A

Determination of DWR Implementation of Senate Bill 610

DETERMINATION OF DWR IMPLEMENTATION OF SENATE BILL 610

The WSA for the proposed Seville 4 Solar Project was prepared using guidance contained in the Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001 (Guidebook) (DWR 2003). The DWR prepared the Guidebook to assist water suppliers in preparation of the water assessments and the written verification of water supply availability required by SB 610 and SB 221; the DWR has no regulatory or permitting approval authority concerning water assessments or verifications of sufficient water supply and provides the Guidebook purely as an assistance tool (DWR 2003). Table A-1 provides a detailed description of how the Guidebook was used in preparing the project's WSA.

Table A-1. Seville 4 Solar Project WSA – Checklist

Guidelines Section Number and Title (DWR 2003)	Guidelines Direction	Relevant WSA Section and Response
Section 1 (page 2). Does SB 610 or SB 221 apply to the proposed development?	Is the project subject to SB 610?	WSA Section 3.4
	Is the project subject to California Environmental Quality Act (CEQA) (CWC 10910(a))? If yes, continue.	Yes, the project is subject to CEQA.
	Is it a "project" as defined by CWC 10912(a) or (b)? If yes, to comply with SB 610 go to Section 2, page 4.	WSA Section 3.4 Yes, the project is considered to meet the definition of "project" in accordance with CWC Section 10912(a) or (b).
	Is the project subject to SB 221? Does the tentative map include a "subdivision" as defined by Government Code 66473.7(a)(1)? If no, stop.	No, the project does not include a "subdivision;" SB 221 does not apply to the project, and no further action relevant to SB 221 is required.
Section 2 (page 4). Who will prepare the SB 610 analysis?	Is there a public water system ("water supplier") for the project (CWC 10910(b))? If no, go to Section 3, page 6.	WSA Section 3.4 No, there is no public water system for the project.
Section 3 (page 6). Has an assessment already been prepared that includes this project?	Has this project already been the subject of an assessment (CWC 10910(h))? If no, go to Section 4, page 8.	No, the project has not been the subject of an assessment.
Section 4 (page 8). Is there a current Urban Water Management Plan?	Is there an adopted urban water management plan (UWMP) (CWC 10910(c))? If yes, continue. If yes, information from the UWMP related to the proposed water demand for the project may also be used for carrying out Section 5, Steps 1 and 2, and Section 7; proceed to Section 5, page 10 of the guidelines.	WSA Section 3.4 No, there is no associated UWMP.
Section 5 (page 10). What information should be included in an assessment?	Step One (page 13). Documenting wholesale water supplies.	Apex Energy will use water supplied by existing and proposed on-site wells.
	Step Two (page 17). Documenting supply if groundwater is a source.	WSA Sections 4.1 and 4.2 Apex Energy will use water supplied by existing and proposed on-site wells.
	Specify if a groundwater management plan or any other specific authorization for groundwater management for the basin has been adopted and how it affects the water supplier's use of the basin.	There is no groundwater management plan. The basin is designated as a low priority basin under the Sustainable Groundwater Management Act.

Guidelines Section Number and Title (DWR 2003)	Guidelines Direction	Relevant WSA Section and Response
	The description of the groundwater basin may be excerpted from the groundwater management plan, from DWR Bulletin 118, California's Ground Water, or from some other document that has been published and that discusses the basin boundaries, type of rock that constitutes the aquifer, variability of the aquifer material, and total groundwater in storage (average specific yield times the volume of the aquifer).	WSA Section 3.1 provides descriptions of the groundwater basin characteristics using available resources, including DWR Bulletin 118.
	In an adjudicated basin the amount of water the urban supplier has the legal right to pump should be enumerated in the court decision.	WSA Section 3.1 The Ocotillo-Clark Valley Groundwater Basin is not an adjudicated basin.
	The DWR has projected estimates of overdraft, or "water shortage," based on projected amounts of water supply and demand (basin management), at the hydrologic region level in Bulletin 160, California Water Plan Update. Estimates at the basin or subbasin level will be projected for some basins in Bulletin 118. If the basin has not been evaluated by the DWR, data that indicate groundwater level trends over a period of time should be collected and evaluated.	WSA Section 3.1 DWR Bulletin 118 does not indicate any recent decreasing trends in groundwater.
	If the evaluation indicates an overdraft due to existing groundwater extraction, or projected increases in groundwater extraction, describe actions and/or program designed to eliminate the long-term overdraft condition.	The evaluation does not indicate an overdraft due to existing groundwater extraction.
	If water supplier wells are plotted on a map or are available from a geographic information system, the amount of water extracted by the water supplier for the past 5 years can be obtained from the Department of Health Services, Office of Drinking Water and Environmental Management.	WSA Section 4, Figure 4. Water pumping is planned for the project.
	Description and analysis of the amount and location of groundwater pumped by the water supplier for the past 5 years. Include information on proposed pumping locations and quantities. The description and analysis are to be based on information that is reasonably available, including, but not limited to, historic use records from the DWR.	There is no water supplier for this project. Existing water demand is accounted for in Section 4.
	Analysis of the location, amount, and sufficiency of groundwater that is projected to be pumped by the water supplier.	WSA Section 5 discusses the amount and sufficiency of groundwater supplies from the Ocotillo-Clark Valley Groundwater Basin
	Step 3 (page 21). Documenting project demand (Project Demand Analysis).	WSA Sections 4.1 and 4.2 document the project water demand. Section 5 provides an impact analysis on potential impacts to the basin.
	Step 4 (page 26). Documenting dry year(s) supply.	WSA Section 5.2 discusses water demand reliability, including during dry-year scenarios.

Guidelines Section Number and Title (DWR 2003)	Guidelines Direction	Relevant WSA Section and Response
	Step 5 (page 31). Documenting dry year(s) demand.	WSA Section 5.2 discusses water demand reliability, including during dry-year scenarios.
Section 6 (page 33). Is the projected water supply sufficient or insufficient for the proposed project?		WSA Section 5 summarizes why the identified water supply/supplies are considered sufficient for the project.
Section 7 (page 35). If the projected supply is determined to be insufficient.	Does the assessment conclude that supply is “sufficient”? If no, continue.	WSA Section 5 It is reasonably anticipated that sufficient water supplies are available for the project.
Section 8 (page 38). Final SB 610 assessment actions by lead agencies.	The lead agency shall review the WSA and must decide whether additional water supply information is needed for its consideration of the proposed project. The lead agency “shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy.”	The WSA for the project will be included as part of the draft environmental impact report for the project. In accordance with SB 610, the lead agency will approve or disapprove a project based on a number of factors, including but not limited to the WSA.

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