San Luis West Solar Project



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WATER SUPPLY ASSESSMENT

Fresno County, California
July 2024

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Acronyms and Abbreviations

AC	Alternating Current
AF	Acre-Foot, Acre-Feet
APN	Assessor's Parcel Number
BESS	Battery Energy Storage System
bgs	below ground surface
CEQA	California Environmental Quality Act
CIMIS	California Irrigation Management Information System
CPW	Coalinga Department of Public Works
DC	Direct Current
DWR	California Department of Water Resources
gen-tie	Generation-tie
GSA	groundwater sustainability agency
GSP	Groundwater Sustainability Plan
kV	Kilovolt
MW	Megawatt
MWh	Megawatt hours
SB	Senate Bill
SR	State Route
O&M	Operation & Maintenance
PG&E	Pacific Gas & Electric Company
POI	Point of Interconnection
Project	San Luis West Solar Project
PV	photovoltaic
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
UWMP	Urban Water Management Plan
WSA	Water Supply Assessment
WWD	Westlands Water District

1.0 BACKGROUND

The intended purpose of a Water Supply Assessment (WSA) is to promote collaborative planning between providers of the local water supply and land use decision-makers. California adopted Senate Bill (SB) 610 and SB 221 in 2001, amending the California Water Code to require that certain types of development projects be analyzed, and results provided in a WSA. These requirements were further adjusted by SB 1262 (2016) which amended Water Code Section 10910(f) to clarify the information to be provided in a WSA. This detailed assessment of water supply availability and reliability is intended to provide local (city and county) decisionmakers with key water supply information prior to a decision on project approval. A WSA must provide the following:

a) Description of the source(s) of water supply that will be used to meet the water demands of the proposed project over a 20-year planning horizon, and

b) Assessment of how changing climatic conditions, particularly long-range drought potential, could affect the project area if a project is implemented.

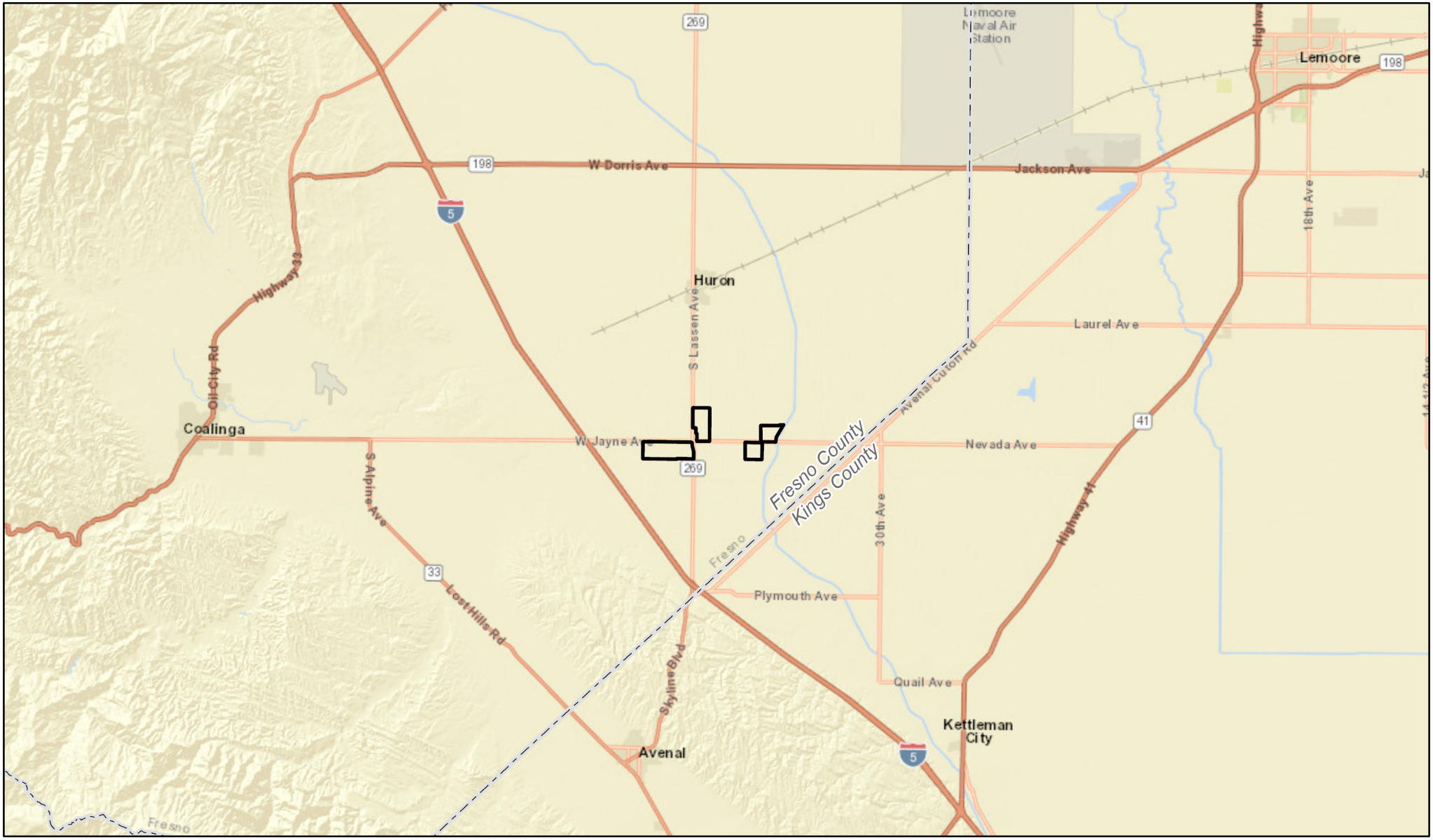
This WSA has been prepared to conform with California Water Code, as amended by SB 610, which requires an evaluation of the availability of water supply source(s) needed to meet the expected water demands of the project. This evaluation considers three scenarios: (1) a normal year (the "no drought" scenario), (2) a single-dry-year (the "limited drought" scenario), and (3) multiple dry-years (the "extended drought" scenario), over a 20-year planning horizon. The WSA accounts for, not only the Project's water demand, but also all other existing and planned future uses of the water supply, to the extent information is available.[1]

1.1 Project Synopsis

San Luis West Solar, LLC (herein referred to as the Applicant) proposes to construct and operate the proposed San Luis West Solar Project (Project) in Fresno County (County), California (herein referred to as the Project site). The Project consists of a photovoltaic (PV) solar generating facility with a nameplate production capacity of 125 megawatts (MW) of alternating current (AC) renewable energy as well as a Battery Energy Storage System (BESS) capable of storing approximately 30 MW of energy with a 4-hour/120 MW-hour (MWh) storage duration. The Project is a utility-scale solar farm on seven parcels totaling approximately 1,400 acres, including solar panels, security fencing, and BESS storage modules. The Project site, which encompasses all areas of temporary and permanent impacts, is approximately 1,100 acres.

The Project site is located in an unincorporated area of southern Fresno County (County), approximately 10 miles northwest of Kettleman City and will connect to Pacific Gas and Electric Company's (PG&E's) 500-kV Gates substation (see Figure 1). The seven parcels associated with the project occupy parts of six different sections, spread among Townships 20 and 21 South, and Ranges 17 and 18 East, of the Mount Diablo Meridian (see Figure 2). The Project parcels are situated adjacent or proximal to West Jayne Avenue, from the Gates substation on the western extent to the California Aqueduct on the eastern extent. The Project site is primarily agricultural land, zoned AE-20 or AE-40 (Exclusive Agriculture with a minimum lot size) in the unincorporated areas of Fresno County. The parcels in the general vicinity of the Project site are similarly zoned.

[1] Groundwater usage and replenishment rates are not universally available, therefore, reasonable assumptions have been made, based on available information and data, to develop quantitative estimates of water supply baseline conditions.





Project Site

N

0 2 4

Miles

Source: ESRI (2024)

NOT FOR CONSTRUCTION

TETRA TECH

Figure 1
Project Vicinity

San Luis West Solar Project
Fresno County, California

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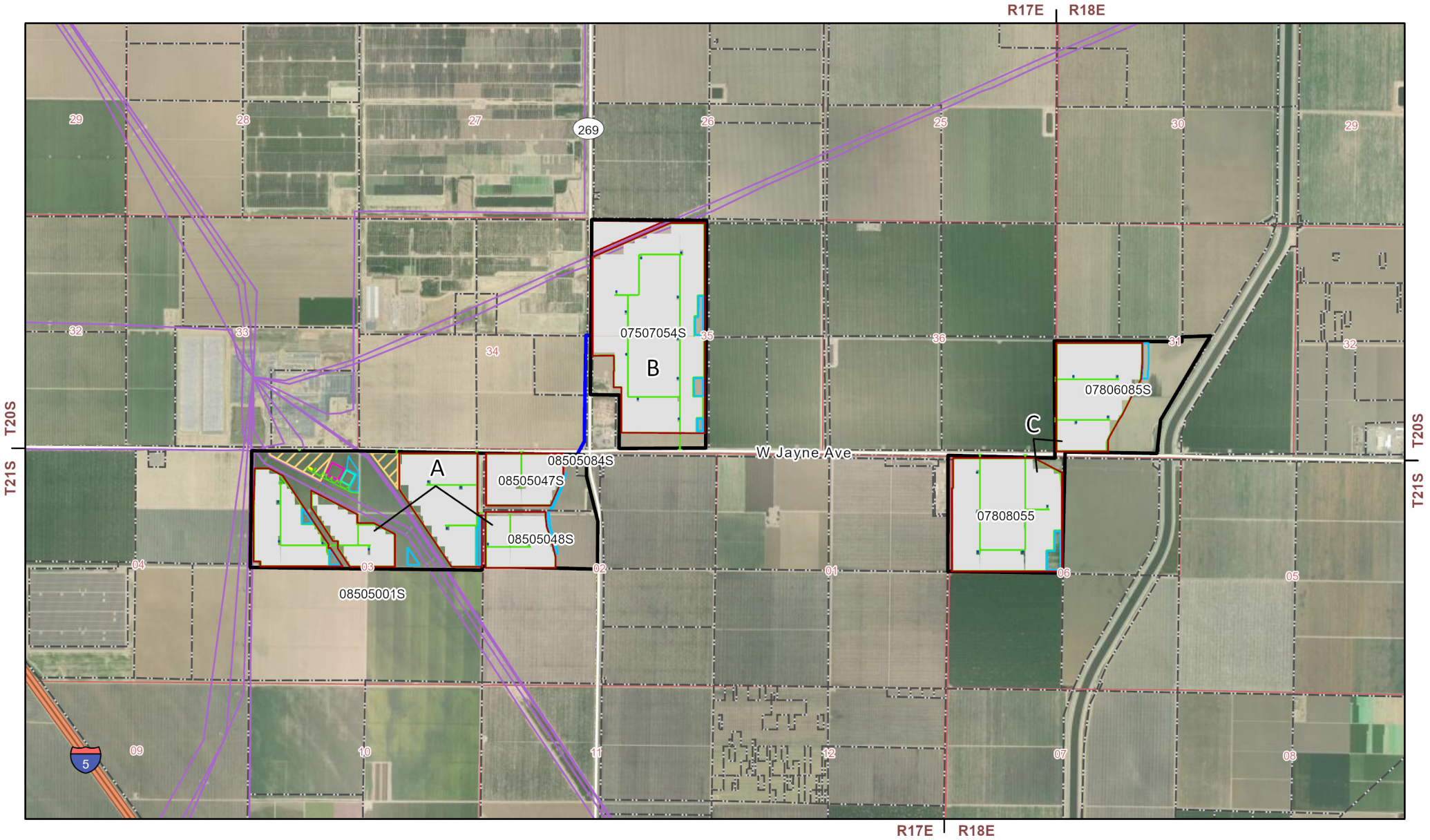
Existing agricultural roads within the Project site will be used for access during construction. No road improvements have been proposed as a part of the Project at the time of this report. The Project site includes three subareas, shown on Figure 2 as Subareas A, B, and C. These Subareas are defined below:

- **Subarea A** would include approximately 280 acres of solar arrays and associated infrastructure (i.e., internal roads, medium voltage collection lines, substation, BESS and project O&M building) located on four parcels totaling approximately 800 acres, of which approximately 650 acres are currently leased by the Project and approximately 150 acres are owned by the Project. Subarea A is located southeast of the existing PG&E Gates Substation, immediately south of West Jayne Avenue and approximately 0.5-mile due west of SR-269. The Substation will also be located within Subarea A and it is anticipated that the BESS will be co-located with the Substation in Subarea A. Two temporary laydown areas totaling approximately 10 acres would be located in Subarea A, along West Jayne Avenue.
- **Subarea B** would include approximately 250 acres of solar arrays and associated infrastructure (i.e., internal roads and medium voltage collection lines) on one parcel, consisting of approximately 300 acres of fully leased land. Subarea B is bordered by SR-269 to the west, West Jayne Avenue to the south, and active row crops to the east.
- **Subarea C** would include approximately 240 acres of solar arrays and associated infrastructure (i.e., internal roads and medium voltage collection lines) on approximately 325 acres of land leased by the Project. Subarea C consists of two parcels located just west of the California Aqueduct. West Jayne Avenue bisects the bottom half of Subarea C.

  Energy from the various solar arrays transmitted to the Substation via a series of 34.5 kilovolt (kV) "collection lines". As depicted in Figure 2, the collection line will begin in the middle section of Subarea B and run directly south along an existing agricultural road for approximately 0.75-mile before angling slightly west and undergrounding at West Jayne Avenue to connect with Subarea A. The collection line system will connect to the BESS and Substation in Subarea A, then a 230 kV gen-tie line will connect from Subarea A to the Point of Interconnection (POI) at the PG&E Gates substation.

The clean, renewable energy generated by the Project will help California meet its renewable portfolio standard set under SB 100 (and signed into law on September 2018). SB 100 requires California utilities to procure a higher percentage of the electrical energy they sell to retail customers from renewable sources than they have in the past. The new target is for them to obtain 50 percent of their energy from renewable sources by December 31, 2026. The target will then increase to 60 percent by December 31, 2030, and 100 percent from eligible renewable energy resources and zero-carbon resources by 2045.





Project Site
Array
Inverters
O&M Building
Substation
BESS
Site Fence
Site Road
Basin
Collection Line
Laydown
Existing Transmission Line
Township/Range
Section
Parcels

N

0 0.25 0.5
Miles

Source: ESRI (2024)

NOT FOR CONSTRUCTION

TETRA TECH

Figure 2
Project Layout

San Luis West Solar Project
Fresno County, California

\\cess706gisfs1\CES\Projects\BOT\G\PROJECTS\SAN_LUIS_WEST_1115-0009\CUP\SLW_CUP_Alt1_Layout_20241011.aprx

The Project will also include energy storage to help the California Independent System Operator (CAISO) store excess energy during times of peak generation for release in times of peak demand, to help address the intermittent nature of solar generation.

Construction of this Project is expected to include a small amount of grading, trenching, or excavation to accommodate underground electric lines and to install foundation piers, and the installation of PV racking, BESS modules, and electrical equipment.

1.2 WSA Applicability

California Water Code Section 10910(a) requires that a WSA be prepared for projects as defined in Section 10912. According to California Water Code Section 10912(a)(5), a "project" is identified any of the following:

- A proposed industrial, manufacturing, or processing plant, or industrial park planned
  - to house more than 1,000 persons,
  - occupy more than 40 acres of land, or
  - have more than 650,000 square feet of floor area.

The Project will occupy approximately 1,400 acres; therefore, it qualifies as a project as defined in California Water Code Section 10912. In addition, the California Water Code (Section 10910[a]) only requires that a WSA is prepared for "projects" (as defined above) if one of the following is expected to be prepared for California Environmental Quality Act (CEQA) compliance:

- an environmental impact report,
- negative declaration, or
- mitigated negative declaration.

The Fresno County Department of Public Works and Planning, the CEQA Lead Agency, will prepare an Environmental Impact Report (EIR) for the Project. Therefore, because it is defined as a project (per the California Water Code) and potential environmental impacts will be reviewed in an EIR, a WSA is required.

1.3 Public Water Supply

There are a number of water purveyors whose service areas cover, or are near to, the Project site, as described in detail in Section 4. However, this location is rural, unincorporated land which has no public water utility providing potable and treated drinking water through an established distribution system of trunk lines and pipes. In addition, the Applicant has obtained ownership of two wells located within Subarea A which are expected to provide adequate water supply for all phases and parcels of the Project. As a result, the Applicant has taken the lead in preparing this WSA.

2.0 PROJECT SETTING

The Project site is located in unincorporated Fresno County, California, just east of Interstate 5 (I-5), and west of the California Aqueduct. It will occupy portions of seven parcels that fall on both sides of West Jayne Avenue (Figure 2). The Project site is located within the Huron and Guijarral Hills U.S.

Geological Survey 7.5-minute topographic quadrangles. The approximate center point of the Project site is located at latitude 36° 8' 17.02" North and longitude 120° 5' 23.29" West.

2.1 Environment

The Project site is located in an agricultural area in southern Fresno County. It is generally bound by flat agricultural lands and sits adjacent to the PG&E Gates Substation. This area is zoned exclusively for agricultural uses (Zone AE-20 or AE-40) by Fresno County. According to the California Department of Conservation, most of this land is designated as Prime Farmland. Within these zoning districts, the County permits utility-scale solar energy uses with an Unclassified Conditional Use Permit (UCUP). The UCUP pre-application process was initiated for the Project in October 2023, and a signed pre-application form was provided to the Applicant on November 6, 2023. With the exception of the PG&E Gates Substation, none of the lands surrounding the Project site are developed.

The Project site is on the western edge of the Great Valley Geomorphic Province, which is a broad, flat, alluvial plain about 50 miles wide and 400 miles long in the central part of California between the Sierra Nevada in the east and the Coast Ranges in the west. The Central Valley is composed of two major valleys: 1) the Sacramento Valley in the north, drained by the Sacramento River; and 2) the San Joaquin Valley in the south, drained by the San Joaquin River (California Geological Survey 2002). This area is within the southern part of the San Joaquin Valley. The Project site is very flat, with a gentle (less than 0.5 percent) slope generally to the east. Elevations range from just over 410 feet above sea level (asl) on the western side to just under 330 feet asl on the eastern side (near the California aqueduct). No natural drainage courses traverse the site and the nearest established channel, Los Gatos Creek, is approximately 1.1 miles northwest of the site. Los Gatos Creek drains a small area of the Coast Ranges and flows east through Coalinga before turning northeast and heading into the San Joaquin Valley.

Historically, the dominant habitat types in and around the Project site were arid grasslands and shrub lands with expansive Valley Oak riparian woodlands and freshwater emergent wetlands in the proximity of water sources. Today, most of the land has been converted for agricultural uses.

2.2 Land Use History

The Project site is located on lands historically used for agriculture, and currently zoned for Agriculture in the Fresno County General Plan. The California Department of Conservation's California Important Farmland Interactive Map lists most of the Project site as Prime Farmland, with a small part of Subarea B identified as Semi-agricultural and Rural Commercial Land (CADOC 2024).

3.0 PROJECT DETAILS

The Project will require a water supply that will initially cover construction uses over a period of approximately 9 months, followed by a long-term water use requirement during operation and maintenance of the Project (a period of up to 35 years). Finally, planning must consider another short-term water supply need during a subsequent period for decommissioning or repowering the Project at the end of the Project's operational lifespan. The working assumption for this WSA is that the Project's

water supply source will be the local groundwater basin, to be extracted using two local wells that are owned by the Applicant.

3.1 Proposed Facilities

The Project would consist of solar PV electric generation capacity coupled with BESS. The PV portion of the Project would produce electricity by way of the PV effect, which uses a semi-conductor material to convert photons from the sun into electrons, for injection into the electrical grid operated by PG&E. The BESS portion of the Project would store electricity either generated by the PV arrays or charged from the PG&E grid. In either case, the BESS would make the stored energy available for discharge during periods of peak electrical load. The Project would consist of 125 MW nameplate PV generating capacity coupled with an estimated 30 MW of BESS featuring a storage duration 4 hours/100 megawatt hours (MWh).

The initial design configuration for the Project includes perimeter fencing, solar arrays, internal access roads, powerline easement, onsite substation, the gen-tie power line, and the BESS area. Additionally, the Project will incorporate a multi-part electrical collector system (a linear feature), multiple inverters, one or more meteorological towers, a telecommunications tower, outdoor lighting, and monitoring equipment for security. Finally, modifications will be needed at the Gates Substation to allow input of energy from the Project, or to provide energy to the BESS for later use. These Project components are described in greater detail below.

Fenced Area. A perimeter fence will be installed along the edge of all Project parcels with an approximate setback from property lines of 50 feet. Fencing will conform to Fresno County requirements, but the expected configuration will consist of either a 6-foot-tall chain-link fence with barbed wire or an 8-foot ranch style fence with no barbed wire. Landscaping will not be proposed unless required. Access gates would be provided at each site entry road.

Solar Arrays. A primary component of a solar PV generation facility are the arrays of PV modules (or panels). Individual modules are mounted on a metal racking system, and, at the Project this system will have east-west tracking capabilities. The panels will be grouped into arrays and mounted on metal racks affixed to the ground using either driven posts or helical screws. The racks will rotate the panels from east to west during the day. The direct current (DC) output from the PV panels will be combined in parallel in combiner boxes and, from the combiner boxes, converted into AC via inverters. Output from the inverters will be fed into transformers to step up the voltage to match that of the grid. Excess energy not discharged into the grid, or energy absorbed directly from the grid, will be converted to DC by a separate inverter for battery storage.

Access Roads. Access from public roads to the Project site would be via main entrances along West Jayne Avenue and State Route (SR)-269. The Applicant plans to use existing interior access roads, however these roads may be improved with the addition of an aggregate base or other native material with a soil stabilization material, if necessary. Interior and perimeter access routes would be designed to meet O&M and public safety access requirements. No public road improvements are currently proposed as a part of the Project. However, driveways connecting public roads to the interior road system may be installed or improvements may be made for existing public road access points.

Pond. An existing pond in the southeast corner of Assessor's Parcel Number (APN) 085-050-47S is currently used for irrigation water storage (see Figure 2). The pond area is approximately 1.75 acres and has an average depth estimated to be under 6 feet, and provides an estimated storage capacity of 10 AF. Groundwater is pumped from two existing wells (described in Section 4.4) and piped to the pond, from which it is distributed for irrigation. During the period of construction, this water will be used for construction needs of the Project while it is being built. When construction is complete, water in the pond will be used for operational needs, primarily water storage for fire suppression emergencies. The estimated 10 AF storage capacity of this pond equated to over 3,250,000 gallons of water.

Project Substation. Energy generated within the Project and transmitted along the collection line system will be sent to the Project's onsite, dedicated substation located in Subarea A (Figure 2). Energy that is collected and aggregated at the substation will be "stepped up" in voltage to 230 kV before being transmitted along a high voltage gen-tie line to the POI.

The overall footprint of the Project Substation is anticipated to be approximately 135 feet by 235 feet with structures such as lightning protection poles and cables reaching approximately 80 feet in height. An emergency generator may be installed for use in the event that the regional transmission system fails. If deemed necessary, the generator would likely be installed at the substation. This emergency generator would provide emergency power until the regional transmission system restores operations. The generator would be powered by propane or diesel and is estimated to be 49 kilowatts or less in size. An approximately 220-gallon fuel tank would be immediately adjacent to the generator. If installed, the generator system will comply with applicable air quality and spill prevention and control requirements.

BESS Component. The primary component of the BESS is the battery storage module, typically a standard-sized shipping container that houses a collection of lithium-ion batteries. The container features integrated heating, cooling, ventilation, and safety systems. The BESS modules will be co-located with the Project Substation in Subarea A, across West Jayne Avenue from PG&E's Gates Substation.

The BESS will feature a secondary set of inverters that can charge and discharge the batteries independent of the PV arrays, thus allowing the batteries to be charged directly from the grid. Excess energy not discharged into the grid, or energy absorbed directly from the grid, can be converted back to DC for battery storage, and then converted to AC yet again when called upon to discharge into the grid.

The BESS is anticipated to be 10 feet in height, with a layout of approximately 300 by 300 feet. Precise measurements for the BESS area and number of modules (containers) will be determined during the engineering design phase.

Project Gen-Tie. The Project will feature a single, approximately 230 kV gen-tie line running between the Project Substation in Subarea A and the PG&E Gates Substation. The route will feature steel or wooden transmission towers, wires, guys, conductors, and other components.

Electrical Collection System and Inverters. The DC output of the Project's solar arrays will be conveyed to the Project Substation via a series of underground 34.5 kV collection lines that will be located in narrow trenches and buried approximately three feet below grade along a series of collection line corridor segments. Depending on site characteristics (soils, road constraints, etc.) there may be limited areas where collection lines would also daylight to conductors that would be situated on a mono-pole system.

Telecommunications. The Project would require connection with the existing local telecommunication service. A telecommunication line is typically comprised of fiber optic cable and/or 25-pair telephone line, which would be installed above and/or below ground, and either attached to existing distribution lines or installed immediately adjacent to the Project Substation. The telecommunication routes would use a combination of existing poles or new poles and below ground installations. Lines would be placed within utility franchise easements to the extent feasible. The POI to the existing telecom facilities would be in a small telephone/fiber optic vault. Interconnection to the Project would be within the Project Substation. Below ground installations are usually installed 24 to 48 inches below grade. Aboveground lines would be placed in accordance with applicable code requirements and are typically placed 6 feet below existing distribution lines or on new, adjacent wooden poles. Telecommunications may also be transmitted by a small wireless antenna, which would be placed at the Project Substation.

Meteorological Data Collection System. The Project may require meteorological data collection system(s) which would include a variety of instruments to collect meteorological data. Data collection components would be mounted at various locations throughout the Project. The meteorological data would be collected at the level of the solar panels or approximately 10 feet above the ground.

Lighting and Security. Security lighting may be installed not only to allow for ongoing maintenance, but also to provide for security. Locations would include entry and egress gates as well as other strategic locations around the Project. Manually controlled lights would be installed at equipment pads and substation. Any Project lighting would be shielded and directed downward onto the Project parcels to minimize potential glare or spillover onto adjacent parcels. All installed lighting would conform to applicable Fresno County outdoor lighting codes.

3.2 Construction

Proposed construction is expected to occur over a period of about 9 months, starting early in calendar year 2026. The activities listed below constitute the bulk of the construction period.

- **Site Preparation**: Excavation and grading would be minimal and staged to minimize dust, maintain existing drainage patterns, and ensure stability of the equipment installations.
- **Installation of Fencing**: The permanent security fence would be installed around the perimeter of the Project site. The eastern and western halves of the site would be separately fenced. Fencing would be designed to allow movement of sensitive wildlife.
- **Access Corridors**: The access corridors would be built of compacted native material to provide access to the panels for maintenance.

- **Installation of the Solar Arrays and Inverters**: The solar trackers would be assembled and installed, and the solar panels attached to them. Concrete slabs would be poured at the inverter locations, and the inverter components would be put in place. Alternatively, prefabricated equipment would be installed on the slab.
- **Electrical Work**: Installation of the underground electric lines to connect the solar arrays with the inverters and the inverters to the Project Substation.
- **Installation of the Substation and Transmission Interconnection**: The Project Substation would be fenced and covered in gravel and the substation equipment would be installed. The Project Substation would then be connected directly to the gen-tie line leading to the PG&E Gates Substation.

Schedule and Workforce. Construction would occur during daylight hours, most likely from Monday through Friday between 7:00 a.m. and 6:00 p.m. Additional hours/days may be needed to meet the projected schedule, but the 55-hour weekly schedule noted above is expected to be adequate. Any construction work performed outside of the normal work schedule would be coordinated with the appropriate agencies and also would conform to Fresno County Noise regulations.

The onsite construction workforce is expected to peak at 300 individuals, and they could be onsite at any given time during the construction period. It is anticipated that the construction workforce will commute to the Project site each day from local communities and report to the designated construction staging yards prior to the beginning of each workday. Parking for construction personnel would be provided onsite. Portable toilets would be used and would be maintained by a private offsite company during the construction period.

It is expected that most workers would commute to the site from nearby communities such as Huron, Coalinga, Lemoore, Visalia, and other locales within commuting distance to the Project site. Construction activities would occur primarily during daylight hours. Workers would reach the site using existing roads.

Site Preparation. The areas to be developed as access corridors would be smoothed and compacted. Grading and compaction would also be required at the onsite substation and the BESS location to provide stable bases for the installation of equipment. The primary method of vegetation removal would be to mow existing vegetation, leaving root structures in place. The concept is to maintain existing drainage to the greatest extent practicable. Spot grading would remove small berms using a diesel motor grader. Stormwater retention basins would be prepared using a combination of diesel scrapers, bulldozers, and end loaders. Diversion swales and berms would be prepared at the Project perimeter using similar heavy equipment. A series of rip-rap cutoff trenches would be constructed perpendicular to natural drainage directions to control erosion within major drainage corridors. Interior access corridors would consist of compacted native soil.

Concrete footings and pads would be required for the inverters, substation transformers, and other equipment. Final concrete specifications would be determined during detailed design engineering. Concrete would be poured throughout the site by truck, purchased from an offsite supplier and trucked into the Project site.

Construction would begin with the installation of fencing around the perimeter of the Project site. The perimeter fence would also include signs providing directions to primary site access. Road corridors, buried electrical lines, PV array locations, and the locations of other facilities may be flagged and staked in order to guide construction activities.

Construction Water Use. During construction of the Project, water would be required for common construction-related purposes, including (but not necessarily limited to) dust suppression, soil compaction, and grading. Dust-control water may be used for ingress and egress of onsite construction vehicle equipment traffic and for the construction of the solar equipment. A sanitary water supply would not be required during construction, because restroom facilities would be provided by portable units to be serviced by licensed providers.

During construction and decommissioning, it is estimated that approximately 120 acre-feet (AF) of water will be used for dust control. Water demand during construction is expected to be the same if the Project is constructed during a year with normal precipitation, a year with less-than-average precipitation, or a multiyear period of less-than-average precipitation.

Disposal of Construction Materials. During construction, the building contractor will arrange to have separate bins available for trash, construction material recycling, and general recycling. These bins will be delivered to the site as required by Fresno County Building Code guidelines. During construction, every effort will be made to minimize the use and disposal of packing materials and construction material waste. Construction recycling, regular recycling, and non-recyclable trash will be picked up regularly during the construction period. All Project components will arrive by truck on pallets, and to the extent possible, all packing materials will be removed from the Project site by the same truck.

Hazards and Hazardous Materials Compliance. To limit the exposure of construction workers to hazardous materials (e.g., construction related fuels and paints), construction activities will comply with applicable worker protection laws and regulations. This includes the Occupational Safety and Health Act, Title 9 of the Code of Federal Regulations, and Title 8 of the California Code of Regulations. The construction contractor selected for the Project will be responsible for ensuring that construction workers are trained in accordance with local, state, and federal requirements for handling hazardous materials. Workers also will be trained to properly identify and handle all hazardous materials. Hazardous waste would be either recycled or disposed at a permitted and licensed treatment and/or disposal facility. All hazardous waste that is shipped offsite for recycling or disposal will be transported by a licensed and permitted hazardous waste hauler and disposed of at an approved location.

3.3 Operation and Maintenance

Once constructed, the Project would be operated remotely, seven days per week and 365 days per year. The Project will be outfitted with a suite of sensors, monitoring equipment, and communications gear as part of the Project's Supervisory Control and Data Acquisition system. This allows the Project to be monitored in real time remotely by the Applicant's remote operations center in Austin, Texas, which is a new, state-of-art remote monitoring center designed to provide round-the-clock operations support in accordance with National Electric Reliability Corporation standards. The remote operators

will be continually aware of plant output, voltage, and local weather conditions and will receive real-time alerts in the event of abnormal operating conditions, allowing the operators to dispatch technicians as needed.

Onsite O&M activities will consist of responding to abnormal operating conditions, routine maintenance and repairs, periodic panel washing, and grounds maintenance (i.e., vegetation control). These activities are anticipated to require site visits on the order of once to twice per month, consisting of a small ground crew.

While the solar panel part of the Project operates during daylight hours, it is anticipated that the Project as a whole will operate 24 hours a day, 7 days a week, as certain electrical connections within the Project may remain charged and the BESS portion of the Project, when charged, can discharge at any time during the day or night.

Operations Water Use. The Project's operational water consumption is expected to be no more than 1 acre-foot (AF) of water per year that would be used for panel washing. Water needs would be supplied by the two onsite groundwater wells.

Waste Disposal. The Project would produce a small amount of waste associated with maintenance activities, which could include broken and rusted metal, defective or malfunctioning modules, electrical materials, empty containers, and other miscellaneous solid waste, including the typical refuse generated by workers. Most of these materials would be collected and delivered back to the manufacturer or to recyclers. Non-recyclable waste would be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III landfill. The closest Class III municipal landfill is the American Avenue Disposal Site, approximately 40 miles north of the Project site, in Delano, California.

3.4 Decommissioning or Recommissioning

Decommissioning occurs at the end of a Project’s useful life. This could be well beyond the initial 35-year operational period, as primary Project components can be upgraded and replaced as needed in order to extend the operational lifespan of the Project by several decades. Nevertheless, at the point when the Project does reach the conclusion of its useful life, decommissioning will take place in a similar fashion to construction, but simply in reverse. A Project-specific Reclamation Plan has been developed for the Project in accordance with County requirements.

All decommissioning and restoration activities would adhere to the requirements of the appropriate governing authorities and in accordance with all applicable federal, state, and County regulations in effect at that time. Following the expiration of a Power Purchase Agreement (PPA) for the Project, the Applicant may, at its discretion, choose to enter into subsequent PPAs or to decommission and remove the system. The components to be removed would include module posts and support structures, onsite transmission poles that are not shared with third parties, and the overhead collection system within the Project site; inverters, transformers, electrical wiring, and equipment on the inverter pads. The Project Substation would be removed if it is owned by the Applicant; however, if a public or private utility assumes ownership of the substation, the substation may remain onsite to be used as part of the utility service to supply other applications.

4.0 WATER RESOURCES EVALUATION

The Project site is located on the western edge of the San Joaquin Valley, where it transitions to the Coastal Ranges geomorphic province. Thus, it is east of the coast ranges, where east-side drainage from the mountains would drain generally toward the east and into the San Joaquin Valley. The Project site falls within the 6-digit hydrologic unit identified as the Tulare-Buena Vista Lakes basin (180300), an interior drained portion of the Great Valley Geomorphic Province (see Figure 3). This area contains no perennial water courses and few defined channels due to the predominance of agricultural fields and low rainfall amounts.

Rainfall is relatively rare in this part of California, which has a Mediterranean climate with wet winters and dry summers. Precipitation occurs primarily from October to March, and very little from April through September. Rainfall records were obtained for three nearby California Irrigation Management Information System (CIMIS) weather stations located within 20 miles of the Project (Table 1 and Figure 4). Note that the average rainfall amounts for these weather stations is less than 10 inches per year, qualifying this area as arid.





Project Site

Tulare Lake (ephemeral)

HUC 6 Boundary: Tulare-Buena Vista Lakes (180300)

HUC 8 Boundary

N

0 20 40

Miles

NOT FOR CONSTRUCTION

TETRA TECH

Figure 3
Surface Water Resources

Water Supply Assessment Report

San Luis West Solar Project

Fresno County, California

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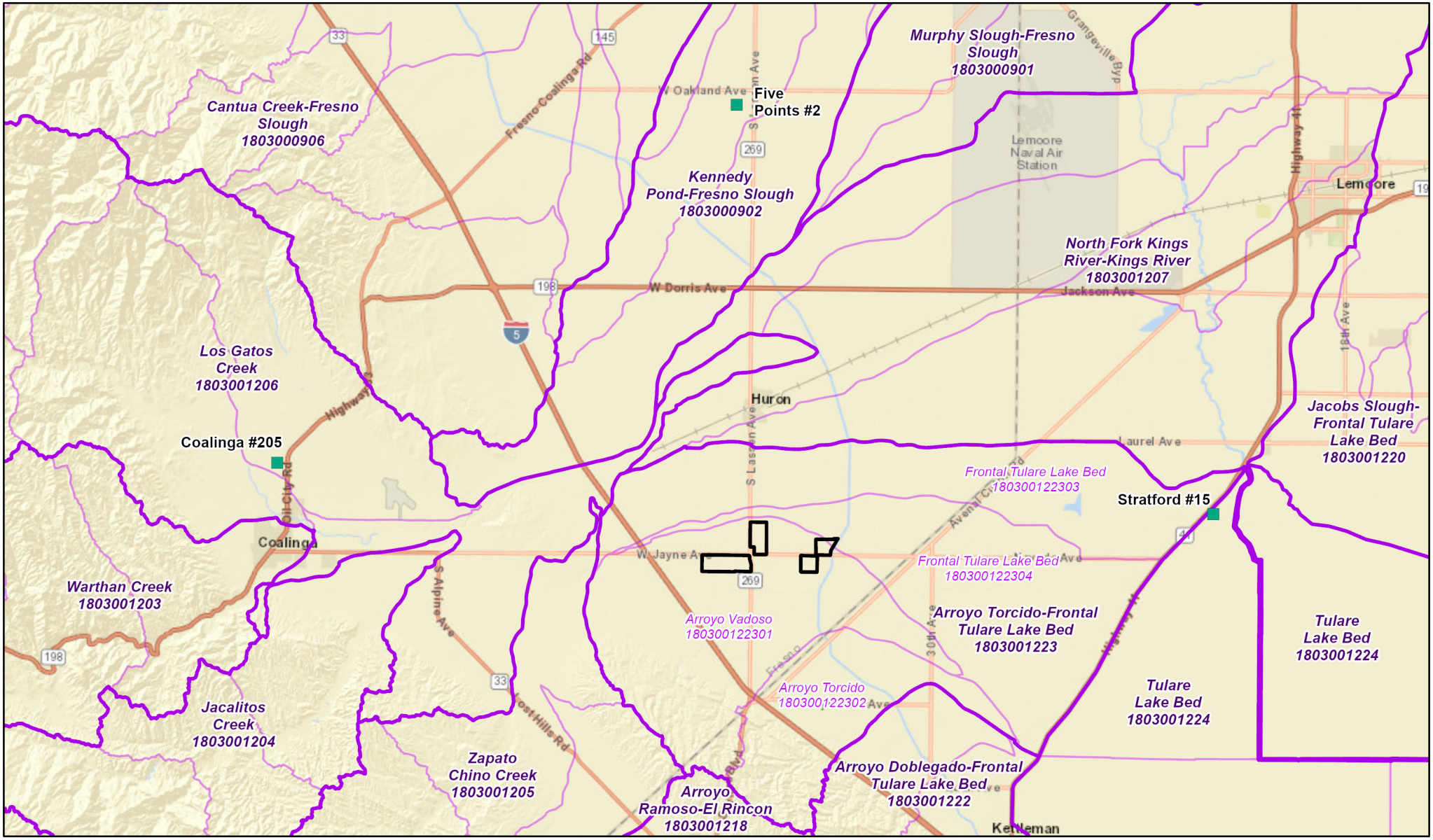
Table 1. Weather Stations

CIMIS Station	Location	Period of Record	Annual Rainfall Total (inches)		
			Average	High	Low
#2 **Five Point** Elevation 285 feet	Fresno County San Joaquin Valley Region	June 1982 to February 2024 (42 years)	8.5	27.22 (2010)	1.52 (2002)
#15 **Stratford** Elevation 193 feet	Kings County San Joaquin Valley Region	October 1982 to February 2024 (41 years)	7.4	22.40 (1996)	2.30 (2013)
#205 **Coalinga** Elevation 730 feet	Fresno County San Joaquin Valley Region	March 2010 to February 2024 (14 years)	5.2	9.58 (2023)	1.83 (2012)

Data source: CIMIS 2024

If only the overlapping, complete years of record are considered for these stations (2010-2023), it presents a more current and drier picture. The average annual rainfall for Coalinga during the overlap period is 5.2 inches, for Five Points it is 7.5 inches, and for Stratford it is 5.4 inches (CIMIS 2024). Figure 4 shows the location of these three stations relative to the Project site, Figure 5 compares the annual rainfall totals for these three stations since 1983 and Figure 6 show the average monthly rainfall amounts over their period of record.

The Project site is within the Westside Subbasin (5-22.09) of the San Joaquin Valley Groundwater Basin (5-22) of California. This subbasin covers about 1,000 square-miles in Fresno and Kings counties. It occupies the southwestern side of the San Joaquin Valley, or essentially the western side of this northwest to southeast trending valley (see Figure 1). Subbasin boundaries are due to physical impediments along the western side of the valley, specifically the rocks of the coast ranges, however they are more administrative on the north, east and south sides (DWR 2006).





Project Site
HUC 10 Boundary
HUC 12 Boundary
Weather Station

N

0 2.5 5
Miles

NOT FOR CONSTRUCTION

TETRA TECH

Figure 4
Local Watershed

Water Supply Assessment Report

San Luis West Solar Project
Fresno County, California

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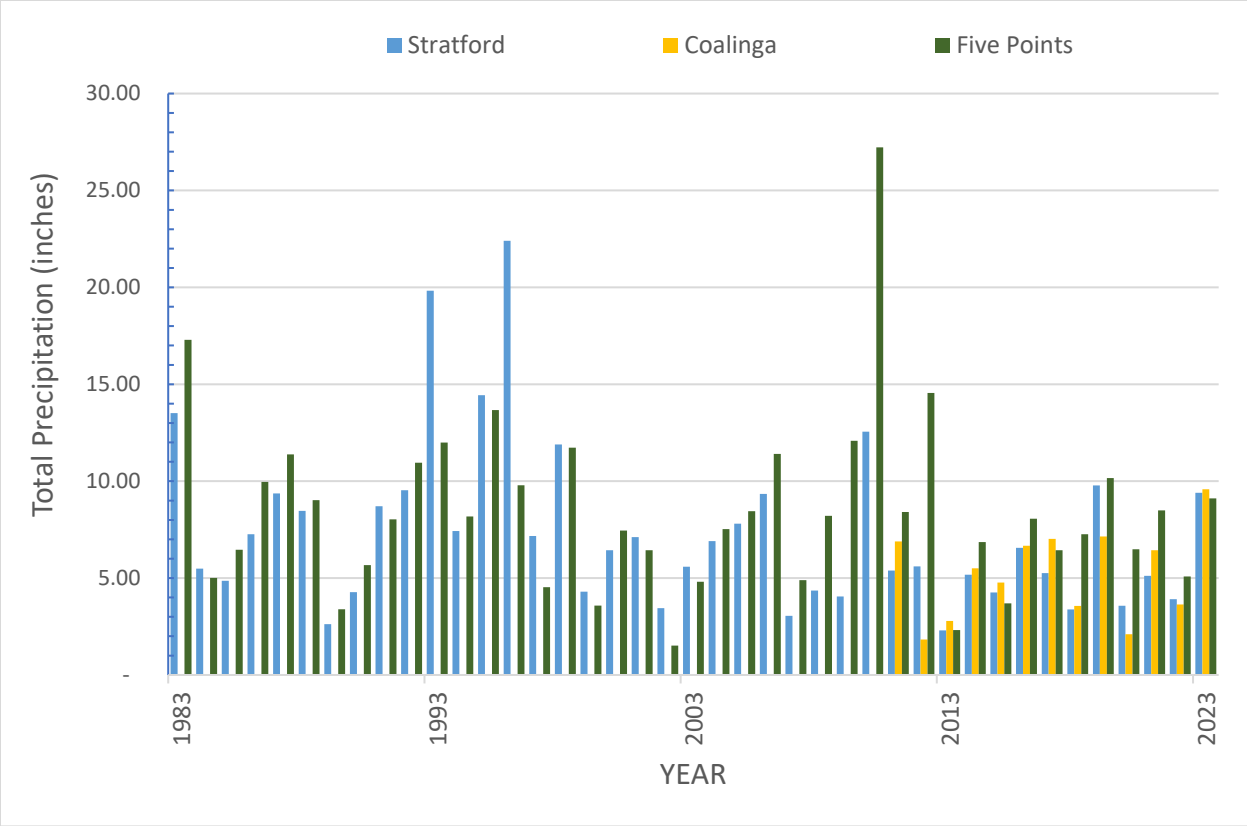

Figure 5. Annual Precipitation Near Project Location

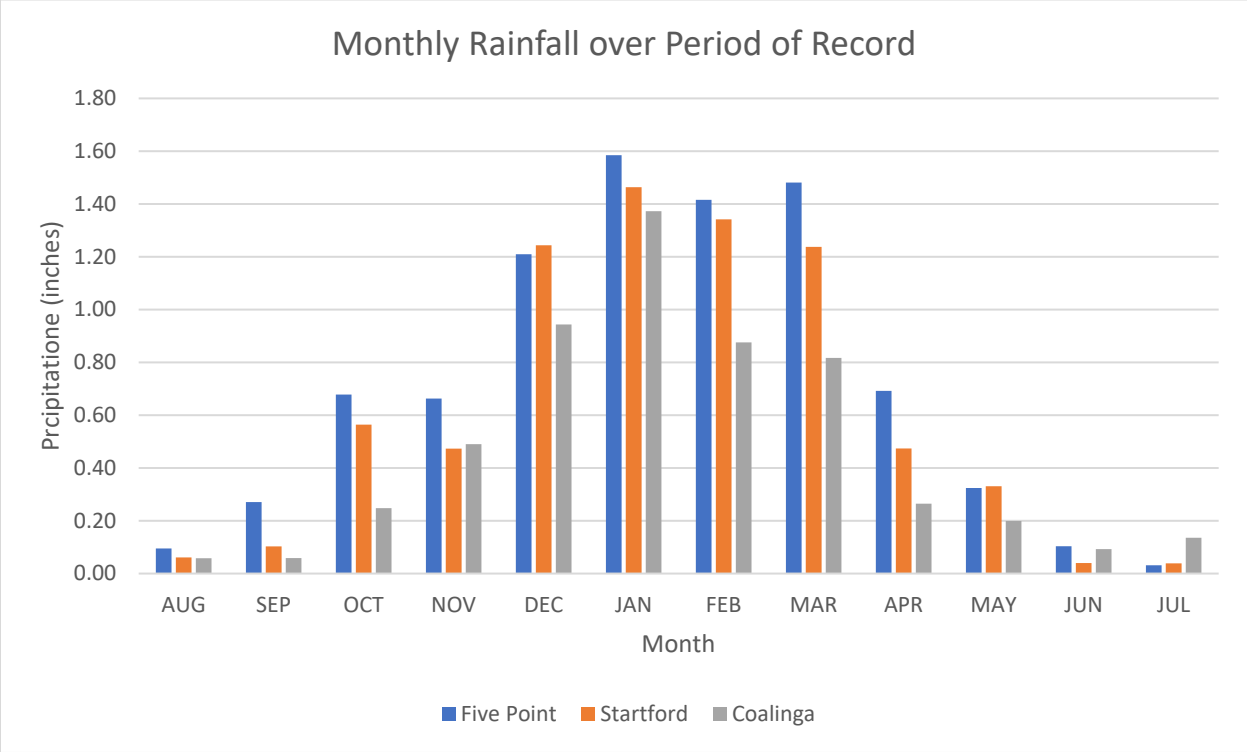

Figure 6. Monthly Precipitation Averages over Period of Record

4.1 Surface Water

Using the national hydrologic unit identification of watersheds in California, the Project site falls within the Tulare Lake Bed HUC 8 subbasin (18030012) in the southern San Joaquin Valley. The natural surface water in the southern San Joaquin Valley primarily originates in the Sierra Nevada Mountains and flows into the valley on its eastern side via the Kern River, Tule River, and Kaweah River. As noted above, the proposed Project is located in an arid area (generally defined as an area that receives less than 10 inches of rainfall per year on average), so surface water resources are very limited locally. No perennial streams flow east to the San Joaquin Valley from the coast ranges. The only watershed of note in the general vicinity is Los Gatos Creek, which includes a southeast trending ephemeral channel about 35 miles northwest of the Project site, near Coalinga.

The California Regional Water Quality Control Board (RWQCB) identifies the hydrologic area in which the Project site is located differently than the national hydrologic unit identification system. The RWQCB refers to roughly the southern half of the San Joaquin Valley as the Westlands Hydrologic Area (HA, #551.1). The Westlands HA encompasses an area greater than 1,000 square miles, while the South Valley Floor Hydrologic Unit (HU) covers about 16,406 square miles. This HU includes parts of four counties (Fresno, Kern, Kings, and Tulare), and is the largest agricultural region in the state. This area saw a slight decline in irrigated acreage between 2005 and 2010, in part due to a significant drought from 2007 to 2009 (RWQCB 2018).

The most significant artificial water supply conveyance through the Tulare Lake Hydrologic Region is the California Aqueduct, which runs from north to south moving surface water from the California State Water Project (SWP). SWP waters are distributed to various water agencies and districts throughout southern California, including those described below in Section 4.3, which are in close proximity to the Project site.

4.2 Groundwater

The Westside Subbasin (5-22.09) lies in the southern end and west side of the San Joaquin Valley, within the Tulare Lake Hydrologic Region. This hydrologic region is an internally drained watershed with surface water inflow from the Kaweah, Kern, Kings, and Tule Rivers (all flowing west out of the Sierra Nevada Mountains). There is no outflow of surface water from the region which drains to Tulare Lake, an ephemeral water body that lies southeast of the Project site (see Figure 3). The subbasin is bordered on the west by the Coast Ranges, comprised of Tertiary marine sediments and sedimentary rocks, with little to no groundwater resources. However, it is bounded by other subbasins on the north and northeast (5-22.7 Delta-Mendota), the east (5-22.8 Kings), the southeast (5-22.12 Tulare), and the southwest (5-22.10 Pleasant Valley). Recharge to the subbasin comes from intermittent stream seepage from the Coast Range into the western valley edges, from deep seepage of irrigation water over the basin itself, and inter-basin groundwater flow from the eastern edge of the subbasin (DWR 2006).

The aquifer system within the Westside Subbasin includes a shallow, unconfined aquifer comprised of unconsolidated continental deposits of Tertiary and Quaternary age that reach depths of 500 feet to 850 feet below ground surface (bgs). An aquitard known as the Corcoran Clay underlies the shallow aquifer, separating it from the deep, confined aquifer. The Corcoran Clay varies in thickness from 20

feet to 120 feet. Some useable groundwater is found in the upper levels of the confined aquifer, but brackish water is found in the deepest parts of the confined aquifer. There are wells that draw groundwater from both the deeper, confined aquifer, and the shallow, unconfined aquifer (DWR 2006).

Groundwater from the Westside subbasin has been used for agricultural purposes since the 1800s. Most wells initially were shallow, drawing groundwater from the upper, unconfined aquifer. Just after the turn of the century, the first deep well (to a depth of 700 feet to 800 feet) was drilled near the present-day Lemoore Naval Air Station, east northeast of the Project Site (see "Lemoore" on Figure 1). Agriculture continued to expand over the subbasin through the 1940's with irrigation exclusively using groundwater. In 1963, the Westlands Water District (WWD) agreed to a water supply contract with the United States Bureau of Reclamation (USBR), to augment the use of groundwater for agriculture. The WWD has expanded its coverage area, initially in 1965 when it merged with the Westplains Water Storage District, and subsequently with additional annexation of land. The WWD now includes 614,700 acres of agricultural land (WWD 2024).

Due to its large area, favorable agricultural setting, and heavy reliance on groundwater, a significant volume of water has been pumped from the subbasin over the past 100 years. This has resulted in land subsidence over a large portion of the subbasin, which in some areas is greater than 8 meters (USGS 2016). Subsidence was identified as early as the 1920s, and has been monitored since the 1970s. Through the importation of surface water, groundwater pumping has been relieved to an extent, and some recharge of groundwater has been accomplished. However, due to a number of drought cycles since 1970, the reliance on groundwater has increased, and recharge has been reduced if not temporarily eliminated (Sneed and Brandt 2015). The Sustainable Groundwater Management Act (SGMA) of 2014 established a framework for long-term protection of groundwater through careful resource evaluation and monitoring, instituting agency responsibility and accountability, and prioritizing basins by the state of the resource (DWR 2024). The WWD was designated as the groundwater sustainability agency (GSA) with responsibility for the Westside Subbasin. In this role, the WWD has developed and is in the process of implementing the Groundwater Sustainability Plan (GSP) to help avoid undesirable results (overdraft and subsidence) and help mitigate such results (Luhdorff & Scalmanini 2022a). The Westside Subbasin (5-22.09) is considered to be a critically overdrafted subbasin, and as such, is designated as a High Priority subbasin (those having the greatest need for planning and mitigation), and therefore required to prepare a WSP (DWR 2024).

4.3 Regional Water Resource Providers

The WWD covers a very large part of the San Joaquin Valley, and almost the entire Westside Subbasin (WWD 2024). In addition to the WWD, there are two municipal water suppliers (the City of Coalinga and the City of Huron), and one other regional GSA (Pleasant Valley) that cover the areas near the Project site (see Figure 7). Fresno County also has been given GSA responsibility for the Westside Subbasin (5-22.09) and the Pleasant Valley Subbasin (5-22.10) and has established a memorandum of understanding with WWD and with Pleasant Valley (respectively) to support development of the GSP for each subbasin.

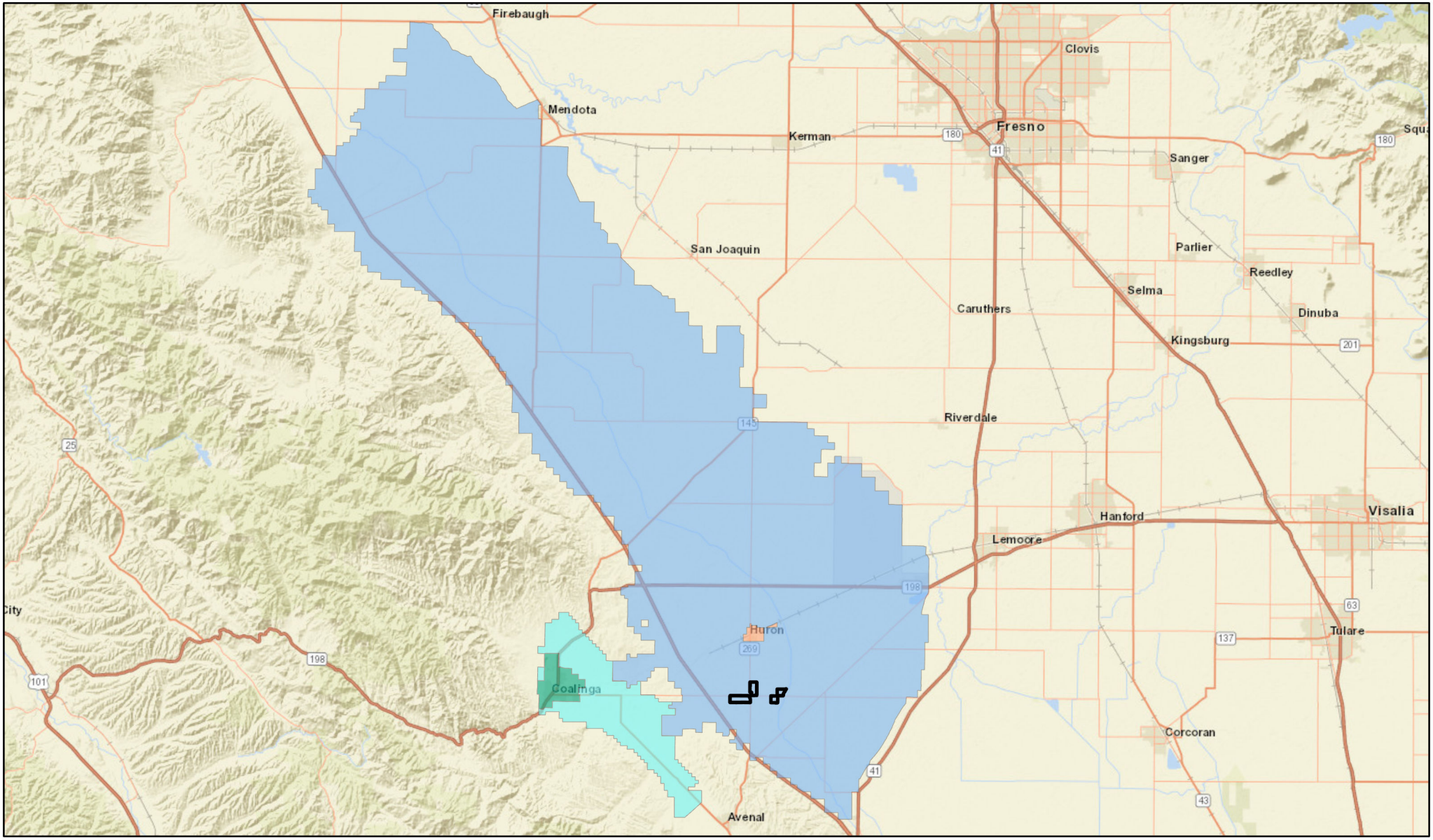

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Table 2 (Project Area Water Providers) lists providers with service areas near the Project site. Brief descriptions of the pertinent agencies are given below. Section 4.4 summarizes water resource availability in the Project area.

Table 2. Project Area Water Providers

Water Purveyor	Jurisdiction	Role
City of Coalinga, Department of Public Works	City of Coalinga.	Provides SWP water to City residents. Not likely to be a source of water for the Project
City of Huron, Utilities Department, Water Division	City of Huron	Provides SWP water to City residents. Not likely to be a source of water for the Project
Pleasant Valley Water District	Covers all of the Pleasant Valley Subbasin (5-22.10) except the area within the City of Coalinga boundary.	The PVWD was formed in 1963 under California Water Code Section 34000-38500 to provide agricultural water to landowners in the Pleasant Valley. Due to distance and limited supplies, the PVWD is not a likely source of water for the Project.
Westlands Water District (WWD)	Covers nearly all of the 1,000 square-mile Westside Subbasin (5-22.09).	The WWD was created in 1952 following a petition to Fresno County and expanded in 1965 in a merger with Westplains Water Storage District. It accepts and distributes SWP surface water throughout the district.

City of Coalinga Public Works (CPW). The City of Coalinga Department of Public Works (CPW) treats and distributes potable water to city residents. The treatment facility, as well as all water mains, fire hydrants, shut-off valves, service lines, and water meters are provided and maintained by CPW. The water source is surface water from the SWP, conveyed through the California Aqueduct and the Coalinga Canal (CPW 2024).

City of Huron Public Utilities (HPU). The City of Huron HPU, Water Division provides potable water to city residents, as well as for fire protection. The water supply source is surface water from the SWP transported through the California Aqueduct to WWD infrastructure and delivered to the City of Huron system (HPU 2024).

County of Fresno, Department of Public Works and Planning, Division of Water and Natural Resources (FWNR). The County of Fresno GSA within the Pleasant Valley Subbasin was created in 2016 after the State of California identified the Pleasant Valley Subbasin (5-22.10) as a distinct groundwater subbasin. The County of Fresno GSA - Westside Area within the Westside Subbasin (5-22.09) was established in a similar time frame, as a result of SGMA. Both GSAs work with the respective water district to support the preparation of the GSP for each subbasin (FWNR 2024).

Pleasant Valley Water District (PVWD). The PVWD was formed to provide agricultural water to farmers in Pleasant Valley and is an independent special district that has a seven-member board of directors. It is not governed by another legislative body and members of the board of directors must hold title to land, or represent a land title-holder within PVWD boundaries. The initial intent was to use SWP surface water as the primary source, but no long-term contract was obtained and SWP supplies only became available in the late 1980s under one-year contracts. The PVWD also has 88 wells in the groundwater subbasin (#5-22.10 Pleasant Valley subbasin, see Figure 1) that provide water supply for irrigation (PVWD 2024).

Westlands Water District (WWD). The WWD was formed by petition to Fresno County for the formation of a water district to help bring surface water resources to the WWD service area for irrigation use. It signed a long-term water supply contract with the USBR which was expanded after the WWD merged with the Westplains Water Storage District. Several trunk lines were constructed and a distribution network was added over time. Use of private wells to pump groundwater has continued to the present to be a significant source of irrigation water supply, especially during drought periods. With the passing of SGMA in 2014, WWD and Fresno County were tasked with developing a GSP for the Westside Subbasin. An initial GSP (Luhdorff & Scalmanini 2020) was submitted to the California Department of Water Resources (DWR) for review and was not approved. A revised GSP (Luhdorff & Scalmanini 2022a) was resubmitted to the DWR, and an approval notification letter from the DWR was sent in March 2023. The official approval determination letter was sent in August 2023 with an appended Statement of Findings and Staff Report (DWR 2023). The revised GSP and associated rules and regulations (WWD-GSA 2023) will govern the use of groundwater from the wells expected to be used for this Project (see Section 4.4 Project Resource Availability).

4.4 Project Water Resource Availability

The Applicant has acquired three parcels of land which are among the seven parcels to be used for Project development. Two of these parcels include deep groundwater supply wells whose water rights now belong to the Applicant, because the parcels are owned by the Applicant (see Table 3, Well Service Areas). Each well has a peak production capacity of 2,000 gallons per minute (GPM). These wells will supply water for Project uses during all three phases of the Project (construction, operations, and decommissioning). No arrangements have been established yet to provide water from these two wells for any other use than the Project. Table 4 (Project Well Details) provides available information on the two water supply wells to be used by the Project.

Surface Water Availability. There are no local surface water sources to speak of in the WWD service area, so the only surface water available is imported through the SWP. This imported surface water is available from the WWD and distributed through its pipe network as available (depending on current drought conditions) and as needed. The WWD reported total surface water use in the 5-year period from 2017 to 2021 ranged between 221,000 AF (in 2021) and 866,000 AF (in 2019) and was used for agricultural, municipal, small water systems, and environmental purposes (Luhdorff & Scalmanini 2022b). However, surface water supply is not a significant consideration for the Project, because there is no expected use of, or need for, surface water.

Table 3. Well Service Areas

Parcel	Parcel Area (Acres)	Project Area (Acres)	Notes
Subarea A			
APN 085-050-01S	633	322	
APN 085-050-47S*	68	68	Includes Well #1
APN 085-050-48S*	77	77	
APN 085-050-84S*	2	2	Includes Well #2

Parcel	Parcel Area (Acres)	Project Area (Acres)	Notes
Subarea B			
APN 075-070-54S	298	298	
Subarea C			
APN 078-060-85S	170	170	
APN 078-080-55	155	155	
TOTALS	1,403	1,092	

* Parcel owned by the Applicant

Table 4. Project Well Details

Well Details	Well #1	Well #2
Location	APN 085-050-47S	APN 085-050-84S
Location Map	Figure 2	Figure 2
Year Drilled	2014	2016
Drilling Records	Available	Available
Well Rehabilitation	None	None
Well Status	Active	Active
DWR Permit Number	WP 0033993	WP 0035637
Producing Casing Size	16 inches	16 inches
Depth (borehole)	1,430 feet	1,450 feet
Depth (casing)	1,420 feet	1,440 feet
Depth (of pump)	800 feet	800 feet
Depth (of screened interval)	810 feet to 1,420 feet	890 feet to 1,440 feet
Standing Water Level	478 feet (2014)	461 feet (2016)
Pump Size	400 HP	400 HP
Pump Type	Electric/Flowserve	Electric/Flowserve
Well Production	2,000 gpm	2,000 gpm
Well Development	None	Details available
Water Analysis	Yes	Yes

Groundwater Availability. The capacity of the Westside Subbasin to hold groundwater is very large but has decreased over time due to subsidence related to groundwater pumping. This is further complicated by the presence of the Corcoran Clay layer over much of the basin, separating the aquifer into a shallow (unconfined) zone and a deep (confined) zone. The DWR (2006) estimated the storage capacity of the shallow zone to be 36,500,000 AF and the deep zone at 65,000,000 AF. However, the available groundwater in the subbasin was estimated at 6,000,000 AF using an average water depth of 111 feet (a value from 1984) and a bottom of the useable groundwater at 1,000 feet. In an area double the size of Westside Subbasin (roughly from Kettleman City to Los Banos), it's been reported that the loss of groundwater storage capacity due to compaction between 1926 and 1970 was approximately 9,920,000 AF (Poland et al. 1975). Many of the worst areas of subsidence were seen in the Westside Subbasin (Ireland, et al. 1984). In the more recent period from 2003 to 2014, subsidence continued in

the larger San Joaquin Valley but at a much slower rate in the area covered by the Westside Subbasin (on the order of millimeters per year), and even had periods of increasing groundwater storage (Sneed and Brandt 2015, Sneed et al. 2018).

Sustainability efforts mandated by SGMA in 2014 prompted the WWD and Fresno County to prepare the GSP for the Westside Subbasin (Luhdorff & Scalmanini 2022a), and to establish the necessary rules and regulations to secure sustainability (WWD-GSA 2023). Because the Westside Subbasin (5-22.09) has been categorized as critically overdrafted, it has been designated by DWR as a High Priority subbasin, thus requiring an approved GSP. The purpose of the GSP is "*to concurrently optimize groundwater use and groundwater storage in the Westside Subbasin and meet the regulatory requirements set forth in ... SGMA*".

The primary method for achieving the sustainability goal of the GSP is to establish a framework for limiting the annual volume of water pumped from individual wells and for monitoring the volumes of pumped groundwater. The limits placed on an individual well establishes the annual volume of water for the acres attached to (serviced by) the well. Table 5 (WWD Annual Groundwater Allocation) shows the annual volumes allowed per well, and the schedule for reduction of this amount to reach sustainable levels. While the sustainable yield is the goal every year, during the transition period (until 2030), an additional transition allocation (as shown in Table 5) is allowed, raising the actual allocation (if needed) to the Allocation Cap. There are allowances for carrying over any unused transition allocation to the following year, with some limitations.

Table 5. WWD Annual Groundwater Allocation

Year	Allocation Cap	Transition Allocation	Sustainable Yield	Project Allocation\1
	(AFY per Gross Acre)			AFY
2022	1.3	0.7	0.6	--
2023	1.3	0.7	0.6	--
2024	1.2	0.6	0.6	--
2025	1.1	0.5	0.6	1,174
2026	1.0	0.4	0.6	1,067
2027	0.9	0.3	0.6	960
2028	0.8	0.2	0.6	854
2029	0.7	0.1	0.6	747
2030-2052	0.6	0.0	0.6	640

Source: WWD-GSA 2023

\1 Project allocation based on two wells, associated with a total area of 1,067acres (see Table 3).

After 2030, groundwater allocations will be established based on well access to either, or both, the shallow (unconfined) or deep (confined) aquifer zones, except for certain township, range section locations where the Corcoran Clay does not occur. The Project wells (located in Township 21 South, Range 17 E, Section 3) are in the exempted area, so there is no distinction between upper or lower zones. Also starting in 2030 the WWD will implement management actions based on the projected status of groundwater levels in the Westside Subbasin. There are three status levels:

Green Occurs when groundwater levels in the Subbasin are 50 percent or greater than the established Minimum Threshold in the Subbasin. If Green status is reached, groundwater users are allowed to pump up to 225 percent of the sustainable yield value (or 1.35 AFY per gross acre).

Yellow Occurs when groundwater levels in the Subbasin are between 15 percent and 50 percent of the established Minimum Threshold in the Subbasin. If yellow status is assessed, groundwater users are limited to the current year allocation plus any carryover, transfers, or groundwater credit.

Red Occurs when groundwater levels in the Subbasin are within 15 percent or less of established Minimum Thresholds in the Subbasin. If red status is assessed, groundwater users may be limited to a smaller annual allocation, or (depending on their account status, i.e. water overdraft status or outstanding fee balance) may not be eligible to pump.

WWD Water Budget. The WWD evaluated the water budget for both the land surface system and the groundwater system for multiple time-period scenarios: (1) historic period (1989-2015), (2) current period (2016 Water Year), (3) projected period (2017-2070), (4) projected period with climate change factors for 2030, and (5) projected period with climate change factors for 2070. The land surface system evaluation is tied to the groundwater system so the focus here for the Project will be on the latter.

Table 6 (WWD Groundwater System Budgets) provides the evaluation of groundwater pumping and the resulting change in storage volume within the Westside Subbasin. The values in the table for expected pumping and change in storage were averages for the historic period, were measured (calculated) for the current period, and are modeling estimates for the projected periods. The sustainable yield for each scenario was calculated by reducing the pumped volume by the change (loss) in storage. While these numbers vary, they generally indicate that the true sustainable yield is less than 300,000 AFY.

Table 6. WWD Groundwater System Budgets

Scenario	Expected Pumping	Change in Storage	Sustainable Yield
	AF per Year		
Historic Period	324,000	-19,000	305,000
Current Period	558,000	-330,000	228,000
Projected Period	322,000	-53,000	269,000
Projected (2030 climate adjustments)	313,000	-47,000	271,000
Projected (2070 climate adjustments)	467,000	-112,000	294,000

Source: Luhdorff & Scalmanini. 2022a

Because the Project will use water from the two onsite wells (see Figure 2 and Table 4), which are within the WWD area, they will be governed by the requirements of the Westside Subbasin GSP (Luhdorff & Scalmanini. 2022a) and Article 1 (WWD-GSA 2023). These wells are attached to the three parcels of land which are owned by the Applicant, whose total area is 147 acres, but the service area for these wells will be 1,067 acres. Therefore, in 2025 (during the GSP transition period), the two wells combined will be entitled to pump an annual groundwater allocation cap of 1.1 AFY per Gross Acre, or

1,174 AFY (see Table 5). This reduces each year until 2030 when the allocation cap equals the sustainable yield rate of 0.6 AFY per Gross Acre, or 640 AFY.

The existing pond in APN 085-050-47S, currently used for irrigation water storage, will be re-purposed for Project water storage. The pond has an estimated capacity of 10 AF (over 3,250,000 gallons of water). Groundwater pumped from the two wells described in Table 3 is currently piped to the pond, from which it is used for irrigation. Before the start of construction, all crop irrigation water use on the Project site will cease, and it will be used solely for construction needs of the Project. When construction is complete, water use is expected to be solely for operational needs, chief among these is fire suppression emergency water storage requirements. With a minimum storage capacity of 10 AF, this pond will store over 3,250,000 gallons of water. The average rate of water withdrawals from the pond during the construction period will be about 200,000 gallons per day. During the operations period, the daily withdrawals will be significantly lower, with occasional use for panel washing and emergency use for fire suppression only in the event of a fire.

4.5 Project Water Demand

The Project would require a water supply during each of the assumed 9-month construction and decommissioning phases, as well as a long-term water supply during the 35-year operational period. The expected water requirements for the proposed Project are summarized in Table 6. The water demand estimates provided in Table 7 and discussed in more detail in the following sections summarize the Project's water needs over the WSA's required 20-year projection and the Project's anticipated operational lifespan of 35 years. These demands allow a quantitative analysis of the availability and reliability of the existing water supply for the proposed Project.

Table 7. Estimated Project Water Demand

Project Phase	Annual Demand (AF/year)	Total Demand (AF)
Construction (Duration: 1 year)[1]		
Dust suppression	100	75
Soil compaction and grading	20	15
Fire suppression[2]	36	27
Total Construction	156	117
Operation and Maintenance (Duration: 35 years)[3]		
Panel Washing[4]	0.5	18
Fire suppression[5]	36	1,260
Total O & M	36.5	1,278
Decommissioning (Duration: 1 year)[6]		
Dust suppression	100	75
Fire suppression	36	27
Total Decommissioning	136	102
TOTAL DEMAND		**1,599**
AMORTIZED DEMAND[7]	**43.8**	

Notes:

1. Construction period is presumed to be 9 months. The full Project construction water demand will occur over this period. The total construction-period water demand is assumed to be 120 acre-feet regardless of the duration of construction. A longer construction period would result in a lower monthly construction demand.
2. Plan to have about 3,250,000 gallons of water available in the onsite pond for emergency fire suppression needs in addition to other uses. The annual value represents the replenishment water needed to keep the pond approximately filled to capacity assuming annual losses to infiltration (27 AF) and evaporation (9 AF).
3. O&M period is assumed to be 35 years. This is 15 years longer than the 20-year projection required in a WSA. The 35-year period is considered for full disclosure and conservative analysis; this table presents all anticipated water demands of the Project over the entirety of its anticipated operational lifespan. During O&M, primary activities that require water supply are washing solar panels and emergency fire suppression. As currently planned, there will be no plumbing requirements for the O&M building to provide water or sanitary service.
4. Estimated solar PV panel washing requirement is approximately 0.5 AFY.
5. The surface water storage pond (3,250,000-gallon capacity) will remain after construction primarily for emergency fire suppression supply. It will be filled regularly over the 35-year operational period to replace water lost to evaporation and infiltration.
6. Decommissioning activities for the proposed Project are not specifically known at this time; therefore, in order to provide a conservative analysis that accounts for all Project phases, this analysis assumes that the Project's decommissioning period would be similar to the construction period, without soil compaction or grading.
7. The amortized demand of 43.8 AFY is the Project's total estimated water demand (1599 AF) averaged over the cumulative duration of all Project phases (36.5 years, rounding for one year each of construction and decommissioning, and 35 years of operation and maintenance).

Construction. It is expected the proposed Project will take approximately 9 months to build, will start early in 2026 and be completed by December 2026. Activities included in Project construction are (i) site preparation and grading; (ii) installation of tracker foundations and underground cabling; (iii) installation of the Project Substation, Project facilities, and electrical components; and (iv) implementation of upgrades at the PG&E Gates Substation. Water requirements during construction primarily will be associated with dust suppression and soil compaction during ground-disturbing activities. Frequency of watering of activities areas will be determined by the type of activity, site-specific soil conditions, and wind conditions. Temporarily stockpiled soils will be watered to stabilize them. Non-potable water may be needed to establish vegetation or distribute earth-binding materials to disturbed areas as construction is completed. During construction, potable drinking water would be trucked in from off-site (most likely as bottled water).

Availability of water for fire suppression will be necessary for construction activities as well as during operations and decommissioning. The onsite 3,250,000-gallon capacity storage pond will have water available at the beginning of the construction period and filled with water regularly for all construction water needs, including fire suppression. This pond will remain in place as part of the Project infrastructure for the operational period and the decommissioning period.

The estimated construction period water demand for dust suppression and soil compaction and grading (120.3 AFY) will average about 200,000 gallons per workday over the Project's anticipated 9-month construction period (assuming a 5-day work week). This estimate is based on Project need and not schedule, thus if the construction schedule start date is delayed, the total water demand will not change, just the daily average.

As stated earlier, the water supply for Project construction will come from two onsite wells pumping groundwater from the Westside Subbasin (5-22.09) and regulated by the WWD, acting as the WSA for the subbasin under SGMA. No imported surface water from the SWP through the WWD will be used directly by the Project.

Operation and Maintenance. The expected operational lifetime of the Project is 35 years. As a result, this WSA has assessed a 35-year projection, to account for the anticipated operational lifespan of the

Project, even though the requirement is to assess a 20-year projection. The Project would operate continuously, seven days a week, until the anticipated end of the Project lifetime is reached. At that point, two options are possible for the Project, either it would be repowered through replacement of panels and other components, or it would be decommissioned and the Project removed.

Operating the proposed Project would include cleaning the PV panels with water, monitoring electricity generation, providing site security, and replacing or repairing facilities and components as needed to support operations. Other O&M activities include erosion control maintenance, restoring and maintaining vegetative cover, and managing vegetation with mowing, grazing, and weed control. Among these activities, only two primary operational requirements have an associated water demand: periodic cleaning of the PV panels, and a fire suppression water stockpile.

Panel Washing. The main water need during operations will be for panel washing. PV panels will be washed with water to remove dust and maintain efficiency. The frequency of panel washing activities will depend upon site-specific conditions such as wind and rain. Solar PV panel washing assumes water demand rates provided by equipment and service providers. The water demand rate is estimated for a washing cycle per panel, multiplied by the total number of panels. It is assumed that panel washing will take place twice per year. This corresponds to approximately 0.5 AFY of water needed for panel washing at the Project.

Fire Suppression. Vegetation, either natural or agricultural, on and around the proposed Project site will be actively managed during all Project phases to minimize fire risk. Combustible vegetation would be either limited in height or removed primarily through grazing and mowing, or by establishing dirt or gravel firebreaks. A Vegetation Management Plan will be prepared and implemented during operations to guide the use of tools such as grazing and mowing to help manage accumulation of potential fuels around Project infrastructure. The proposed Project would also include fire breaks around the site boundary in the form of compacted dirt or gravel breaks and access driveways subject to Fresno County standards.

The Project plans to use an existing, onsite pond (with a 3,250,000-gallon capacity) for water storage during the construction phase and leave it in place during Project operations primarily as a source of water for emergency fire suppression. The pond will lose water continually to infiltration through the bed into soils, and to evaporation to the atmosphere. A site-specific analysis of these losses has not been performed to quantify the numbers precisely for the Project, but estimates derived from general rates available in the literature have been made for this report. Infiltration rates into clay-rich soils from a number of sources were reviewed (Caltrans 2020, Jarrett 2022, and NRCS 2014). Values ranged from 0.5 inches per hour to 4.8 inches per hour. Since the pond has been in place a number of years and likely accumulated fine sediments on the bottom, the smallest rate (0.5 inches per hour) was used to estimate annual loses, which multiplied out to approximately 27 AFY for the 1.75-acre pond. To estimate evaporation losses at the Project site, a 50-year record of monthly pan evaporation rates for Kettleman City (WRCC 2024) and monthly evapotranspiration rates for California Zone 10 and weather stations #2, #15, and #205 (CIMIS 2024) were considered. Values ranged from a low of 0.93 inches per month (for December and January) to a high of 16.11 inches per month (for July). The average of values from the three local weather stations were selected as most representative of the Project site. Annual evaporation from the 1.75-acre pond was thus calculated for each month and summed to an

estimated 9 AFY. Therefore, the pond will need to be replenished periodically (estimated at about 2.92 AF, or 950,000 gallons, per month) with water pumped from the wells. The final design of the fire suppression system will be coordinated with Fresno County.

Decommissioning or Repowering. The operational lifetime of the proposed Project is expected to be 35 years. Therefore, although a WSA is only required to assess water supply availability for a 20-year projection, this WSA addresses a 37-year projection, which includes one year of construction, 35 years of O&M, and one year of decommissioning or repowering. Due to this length of time, it is highly speculative to assume what the water demands at the time of decommissioning or repowering will be. In order to address this issue, it is assumed that water demands for decommissioning or repowering will be roughly the same in duration (9 months) and intensity (136 acre-feet, without need for soil compaction water use) as the construction period.

5.0 ASSESSMENT CONCLUSIONS

The main purpose of SB 610 was to ensure that an effective evaluation of water resource availability is performed for a proposed Project during the approval process, and the results are clearly shared, discussed, and agreed upon by water providers and local planning agencies. This WSA provides the initial assessment of water supply for the Project, and acts as a vehicle for initiating the water supply dialog.

SB 610 requires the prepared WSA to meet certain requirements:

- The WSA must address four initial questions:
  1. Is there a public water system that will service the proposed project?
  2. Is there a current Urban Water Management Plan (UWMP) that accounts for the project demand?
  3. Is groundwater a component of the supplies for the project?
  4. Are there sufficient supplies to serve the project over the next twenty years?
- In addition to these initial questions, the primary goal of the WSA is to assess the resource to determine if it is adequate:

  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 supplies, including agricultural and manufacturing uses?

The conclusions provided in this section are initially summarized for each of the four questions from SB 610 noted above. Additional details supporting these answers are provided in Subsection 5.1 (considering water supply sources and reliability)), Subsection 5.2 (assuring water supply reliability), and 5.3 (summarizing the conclusions of this report).

Further, SB 1262 was passed in 2016, amending Water Code Section 10910(f) to outline additional specific requirements for water supply assessments. These requirements have been addressed within this report, as follows:

- A review of applicable urban water management plans (discussed in response to question 2, in Section 5.0);
- A description of the groundwater basin (see Westside Subbasin [5-22.09] description Section 4.0, paragraph 4, and Section 4.2);
- Information regarding basin status (provided in Section 4.2);
- Information on historical use of groundwater in the basin (discussed in Section 4.4 and quantified in Table 6);
- Projected groundwater use (discussed in response to question 3, in Section 5.0); and
- Analysis of groundwater sufficiency (discussed in response to question 4, in Section 5.0).

Is There a Public Water System that Will Serve the Proposed Project?

ANSWER: No. California Water Code Section 10912 defines "public water system" as "a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections." The WWD does not provide potable water supply to individual end-user households. Therefore, this WSA assumes the Project would not be served by a public water system.

Is there a current Urban Water Management Plan (UWMP) that accounts for the project demand?

ANSWER: No. The proposed Project location is in a very rural area, not an urban or suburban area with concentrated personal residences. There is no need for a UWMP at this location. This WSA relies on the SGMA-mandated GSP prepared for the Westside Subbasin for resource evaluation data.

Is Groundwater a Component of the Supplies for the Project?

ANSWER: Yes. It Is anticipated that the Project's water demand will be met in full by groundwater from two wells, each one located on a separate parcel that is incorporated into the Project site. Groundwater produced from these wells is subject to the requirements of the GSP (Luhdorff & Scalmanini 2022a) and Article 1 (WWD-GSA 2023), which provides the rules and regulations to implement these requirements.

Are There Sufficient Supplies to Serve the Project Over the Next Twenty Years?

ANSWER: Yes. The expected water demand for the Project, amortized over the 37 years of this assessment is 43.8 AFY. The actual demand sequence is front- and end-loaded, with nearly 20 percent of the total water use in the first and last year. The remaining volume will be used in 2 percent increments during each of the Project operations years.

The Westside Subbasin (5-22.09) is considered a critically overdrafted groundwater resource and therefore is designated as a High Priority subbasin under SGMA. In response, the WWD, with support from Fresno County, has prepared a GSP that was submitted to the DWR for approval by the established deadline. After an initial review and subsequent revisions, the amended GSP (Luhdorff & Scalmanini 2022a) was approved in 2023 (DWR 2023). The GSP proposed several management actions to improve subbasin conditions and return to a sustainable use level while concurrently improving aquifer storage and recovery. One of these actions is to implement an allocation system that slowly reduces allowable pumping volumes over time to return to a sustainable yield. It accomplishes this

through restrictions placed on individual wells within the WWD service area starting in 2022 and ending in 2030.

The Project has acquired two wells with an allocation cap of 1,174 AF for the construction year 2025. This allocation cap is more than the expected construction water demand of approximately 156 AF for 2025 (see Table 6). Also, the final allocation cap, for years 2030 through 2052, of 640 AF is significantly greater than the expected annual water demand of 36.5 AF that is projected for the 35-year operations period of the Project, or 136 AF of demand for the year of decommissioning (2053).

5.1 Water Supply

This WSA is consistent with the requirements of California Water Code as amended by SB 610. A WSA is indicated for the Project because it will involve more than 40 acres, and this effort will require that an EIR be prepared. The water supply source for the proposed Project will be groundwater pumped from onsite wells. Because the Westside Subbasin (5-22.09) is a High Priority basin, measures have been established to limit the withdrawal of groundwater by wells in the subbasin. However, under the new limits, the projected use of groundwater by the Project during construction would be well within the allocation cap, and during operations the projected annual water use of 36.5 AF would be far less than the allocation cap, even after the cap reaches its ultimate goal in 2030 (88 AFY). Thus, during the life of the Project it would eliminate the use of over 23,700 AF of groundwater because the current agricultural uses of the Project area would end when construction begins.

Groundwater Management. The recently approved GSP for the Westside Subbasin has established a long-term plan for reducing the annual amount of groundwater withdrawn for the entire basin. This will be accomplished by limiting the amount of groundwater allowed to be withdrawn from individual wells, based on the number of acres the well serves. The amount of groundwater pumping allowed (the allocation cap) will be reduced over a transition period that started in 2022 and will end in 2030. At the end of the transition period, the allocation cap will result in a sustainable yield from the subbasin for the long-term. Because the Project has acquired three parcels of land that include the rights to two existing water-supply wells, it will be replacing an existing water user, and not creating a new, or additional demand on the groundwater resource in the Westside Subbasin. In addition, the proposed need for water during construction will be within the allocation cap for the acquired parcels.

Water Supply Reliability. The reliability of the water supply within the WWD service area has been projected through the year 2070 for both the land surface system and the groundwater system (Luhdorff & Scalmanini 2022a). These projections considered the effects of drought years and non-drought years to help establish what can be accepted as the sustainable yield for groundwater from the subbasin. Also factored into the evaluation was the projected importation of surface water, used to both offset the need for reliance on groundwater and to provide water to recharge groundwater supplies in the subbasin. Finally, a number of management actions were considered for mitigating possible undesirable results identified within the subbasin. Implementation of these management actions, and the associated monitoring to track their effectiveness, is expected to verify success or show a need for adjustment. The volume of SWP supplies delivered to the WWD could decrease under some climate change scenarios. If the volume of SWP water declines, the GSP provides options for

adjusting the management actions to help reduce water demand and/or increase supply from alternate sources.

It bears repeating that implementation of the Project would convert the existing land use on the site from agricultural (with irrigation) to solar energy production, which would require far less water than the current land use. Such a land use conversion would improve the prospects for water supply reliability, by lowering the water demand on this land.

5.2 Water Availability Conclusions

The information and analysis provided in this WSA are based on evaluations and water data provided in the GSP (Luhdorff & Scalmanini 2022a). These evaluations support the conclusion that with proper management, there will be sufficient water available in the subbasin to meet the needs of the Project over the next 37 years. This Project anticipates use rates of 120.3 AFY in the first year, 0.8 AFY over the next 35 years, and 100.3 AFY in the last year (year 37). These are smaller than the allotment cap for the first year (in 2025) and last year (year 37) and significantly smaller than the allotment cap in years 2 through 36.

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