County of Fresno

DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

Planning Commission Staff Report
Agenda Item No. 7
October 22, 2020

SUBJECT: **Unclassified Conditional Use Permit (CUP) Applications No. 3562, 3563, and 3564 and associated Environmental Impact Report No. 7257 (State Clearinghouse No. 2017091038)**

Allow the construction, operation, maintenance, and ultimate decommissioning of a 150-megawatt (MW) solar photovoltaic (PV) generation facility, an up to 20-MW solar PV generation facility, and an up to 100-MW energy storage facility. The Fifth Standard Solar Facility Project Complex (proposed project) includes PV electricity generating facilities, a battery storage facility, and associated infrastructure. The proposed project is located on twelve contiguous parcels (project site), totaling approximately 1,600 acres in unincorporated Fresno County. A new generation-tie (gen-tie) line would be constructed to connect the solar and storage components of the proposed project to Pacific Gas and Electric's (PG&E's) adjacent Gates Substation (point of interconnect). The anticipated lifetime of the proposed project would be 35 years and would be decommissioned once operations of the facility cease.

LOCATION: **The approximately 1,600-acre project site is in located in unincorporated Fresno County on the west side of State Route 269 (Lassen Avenue), between Gale Avenue and Jayne Avenue, approximately one and a half-miles south of the City of Huron and approximately two (2) miles east of Interstate 5 (I-5). (Sup. Dist. 4) (APNs: 075-060-15s, 075-060-52s, 075-070-01s, 075-070-32s, 075-070-33s, 075-070-34s, 075-070-35s, 075-130-12s, 075-130-54s, 075-130-59s, 075-130-60s).**

OWNER: **G3 Farming Trust, Woolf Family Trust No. I and Woolf Properties**

APPLICANTS: **RWE Solar Development, LLC**

STAFF CONTACT: **David Randall, Senior Planner**
(559) 600-4052

Chris Motta, Principal Planner
(559) 600-4227

RECOMMENDATION:

1. Move to:

    - Certify that the Environmental Impact Report (EIR) prepared for the Fifth Standard Solar Facility Project Complex Project (proposed project) consisting of Unclassified Conditional Use Permit Nos. 3562, 3563 and 3564, as complete and adequate in conformance with the California Environmental Quality Act (CEQA);

    - The Final EIR (FEIR) was presented to, reviewed and considered by the Planning Commission;

    - The certification of the FEIR reflects the Planning Commission's independent judgement; and

    - Adopt the CEQA Findings of Fact and Statement of Overriding Considerations, and certify Environmental Impact Report (EIR) No. 7257 prepared for the proposed project.

2. Move to determine the required Findings can be made and move to approve Unclassified CUP Application Nos. 3562, 3563, and 3564, subject to the Mitigation Measures, Conditions of Approval and Project Notes listed in Exhibit 1; and

3. Direct the Secretary to prepare a Resolution documenting the Commission's action.

EXHIBITS:

1. Mitigation Monitoring and Reporting Program, Conditions Compliance Matrix and Mandatory Requirements
2. CEQA Findings of Fact and Statement of Overriding Considerations
3. Regional Location Map
4. Zoning Map
5. Site and Surrounding Land Use Map
6. Site Plans and Elevation Details
7. Applicant's Operational Statement and Reclamation Plans
8. Applicant's Pest and Weed Management Plan
9. ICF Water Study (February 1, 2019)

NOTE: The Draft and Final EIRs for the Fifth Standard Solar Facility Project Complex are available for review at the following link:

http://www.co.fresno.ca.us/EIR

These documents were previously distributed to members of the Planning Commission as part of Advance Agenda Item Material on October 8, 2020.

SITE DEVELOPMENT AND OPERATIONAL INFORMATION:

Criteria	Existing	Proposed
General Plan Designation	Agriculture	No Change
Zoning	AE-20 (Exclusive Agricultural, 20-acre minimum parcel size)	No Change
Parcel Size	APN 075-060-15: 160 acres APN 075-060-52: 159 acres APN 075-070-01: 633 acres APN 075-070-32: 144 acres APN 075-070-34: 151 acres APN 075-130-10: 1 acres APN 075-130-12: 2 acres APN 075-130-54: 77 acres APN 075-130-59: 79 acres APN 075-130-60: 157 acres APN 075-130-35: 10 acres APN 075-130-33: 10 acres	No Change
Project Site	Historically the site has been farmed with crops such as tomatoes, wheat, onions, garlic, and cotton. Since 2014 portions of the site have been left fallow with mainly tomatoes and wheat being rotated since 2015.	Solar facilities will cover most of the parcels (see Structural Improvements below).
Structural Improvements	There are no structures on the site except for high voltage electrical transmission line towers which support high voltage lines cross over the southwest corner of the site (APNs 075-070-32,33,34, and 35).	The existing transmission structures would not be removed. The solar facility would not be constructed under the lines. The facilities would include two individual facilities with arrays of solar PV modules (or panels) and support structures, a substation, inverters, transformers, and a 34.5 kV overhead collection system, and include an Energy Storage System and other necessary infrastructure including a permanent operation and maintenance building, water storage, meteorological data system, telecommunications infrastructure, access roads, and security fencing.

Criteria	Existing	Proposed
Nearest Residence	Approximately 750 feet (0.14 mile) east of the Project site	No Change
Surrounding Development	Agricultural production, scattered rural farm residences, solar energy and transmission-related uses, and an electrical substation.	No Change
Operational Features	N/A	See above “Project site”
Employees	Unknown	A peak work force of up to 300 on-site personnel would be expected during Project construction. On a typical day during operation, the number of staff on site may range from none to 11 during periodic maintenance events.
Customers	N/A	None
Traffic Trips	Seasonal trips associated with disking, planting, irrigation and harvesting of crop, and other routine farming practices.	Construction activities are estimated to generate 1,200 daily one-way trips with slightly less for Decommissioning activities. The Project would not generate a substantial number of trips during its operation and periodic, routine maintenance events.
Lighting	None	Motion-activated security lighting would be used at the on-site storage and operations structures and substations. All lighting would be shielded or downward facing consistent with local design requirements.
Hours of Operation	N/A	The solar modules at the site would operate during daylight hours, 7 days a week, 365 days a year. Operations and maintenance staff typically would work during regular business hours Monday through Friday. Non-routine (emergency) maintenance or major repairs

Criteria	Existing	Proposed
		could require additional workers and may also require work to occur at night when the Project is not generating power to the grid.

EXISTING VIOLATION (Y/N) AND NATURE OF VIOLATION: N

ENVIRONMENTAL ANALYSIS:

As stated in CEQA Guidelines §15121(a), "[a]n EIR is an informational document which will inform public agency decision-makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. An EIR is not intended to recommend either approval or denial of a project. Rather, an EIR is a document whose primary purpose is to disclose the potential environmental impacts associated with an action or 'project.'"

In addition, CEQA Guidelines §15151 contains the following standards of adequacy:

> *An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts.*

As required by CEQA Guidelines §15120(c), an EIR shall:

- Provide a sufficiently detailed project description;
- Discuss the existing environmental setting;
- Identify and evaluate potential environmental impacts of the project, the cumulative effects of the project, and other existing or proposed activities in the vicinity;
- Describe feasible mitigation measures that could substantially lessen or avoid the project's significant adverse environmental impacts; and
- Identify and evaluate alternatives to the project that could substantially lessen or avoid any of the project's significant environmental impacts.

CEQA does not require evaluation of all possible alternatives, only evaluation of "a range of reasonable alternatives" to encourage both meaningful public participation and informed decision making [CEQA Guidelines §15126.6(a)]. "The discussion of alternatives need not be exhaustive, and the requirement as to the discussion of alternatives is subject to a construction of reasonableness. The statute does not demand what is not realistically possible given the limitation of time, energy, and funds" [*Residents Ad Hoc Stadium Committee v. Board of Trustees* (1979) 89 Cal.App.3d 274, 286; see also CEQA Guidelines §15126.6(f)(3)]. In addition, as stated by the court in *Village of Laguna Beach, Inc. v. Board of Supervisors* (1982) (134 Cal.App.3d 1022, 1029), "Absolute perfection is not required; what is required is the production of information sufficient to permit a reasonable choice of alternatives so far as environmental aspects are concerned."

Unclassified CUP applications for the Project were submitted to Fresno County in December of 2016 The EIR was prepared in compliance with CEQA (Pub. Res. Code §21000 et seq.) and the CEQA Guidelines (14 Cal. Code Regs. §15000 et seq.). Technical analysis was conducted, and public comment was solicited and considered to ensure that potential environmental impacts of the Project have been evaluated and disclosed in the EIR. A summary of the steps of environmental review and public comment process is below:

- A Notice of Preparation was prepared for the Project and circulated to all trustee agencies, responsible agencies, and interested parties beginning on September 15, 2017, for a 30-day review period ending on October 16, 2017.
- On September 27, 2017, the County Department of Public Works and Planning, Development Services and Capital Projects Division, hosted an agency and public scoping meeting at the Keenan Community Center, Huron, California, to discuss the scope of the analysis to be conducted for the EIR.
- A Notice of Availability for the Draft EIR was filed with the State of California Clearinghouse on February 7, 2020.
- A Notice of Availability of the Draft EIR was published in the Business Journal and on the County's website on February 7,2020; and notification of the document's availability was mailed to the Project's distribution list to inform individuals, organizations, and agencies that previously expressed interest in the Project.
- The Draft EIR was circulated for review and comment during a 45-day period that began on February 7, 2020 and ended on March 23, 2020.
- The Draft EIR was made available for public review at the Fresno County Main Library, the Fresno County Huron Branch Library, the County Public Works and Planning offices, and on the County's website.
- Copies of the Draft EIR were provided to responsible, trustee, and other federal, state, and local agencies expected or known to have expertise or interest in the resources that the Project may affect.
- Copies of the Draft EIR or notices of the Draft EIR's availability were sent to organizations and individuals with special expertise on environmental impacts and/or who had previously expressed an interest in this Project or other activities.
- On March 4, 2020, the County Department of Public Works and Planning, Development Services and Capital Projects Division, hosted a public meeting at the City of Huron Keenan Community Center, Huron, California, to discuss the Draft EIR and project review process and to receive public comments.
- On October 9, 2020, the Final EIR, which includes responses to comments on the Draft EIR, was made available in electronic form via the County's website and on CD. Printed copies also were made available for public review at the County Public Works and Planning offices.
- On October 9, 2020, the Final EIR or notice that the Final EIR was available on the County's website was provided to agencies, organizations, and members of the public who were included on the Project's distribution list (31 total) and those who had specifically requested notice.

The EIR found that the Project would have:

No impact regarding;

- Land Use and Planning
- Mineral Resource
- Recreation

Less-than-significant impact regarding;

- Public Services
- Utilities and Service Systems
- Energy Conservation
- Hydrology and Water Quality

Less-than-significant impact with the implementation of recommended Mitigation Measures regarding;

- Aesthetics,
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Transportation and Traffic
- Wildfire
- Paleontological Resources
- Tribal Cultural Resources
- Noise and Acoustics

The Project would have significant and unavoidable impacts regarding;

- Agriculture
- Land Use and Planning

PUBLIC NOTICE:

Notices of this public hearing were sent to 23 property owners within one mile of the subject parcels, exceeding the 300-foot minimum notification requirements prescribed by California Government Code Section 65091 and the County Zoning Ordinance.

PROCEDURAL CONSIDERATIONS:

In order for the project to be approved the EIR must be certified, and due to the significant unavoidable environmental impacts identified in the report, Findings of Fact and Statement of Overriding Considerations must also be adopted by resolution.

An Unclassified Conditional Use Permit (CUP) may be approved only if five findings specified in the Fresno County Zoning Ordinance, Section 873-F are made by the Planning Commission.

The decision of the Planning Commission on an CUP Application is final, unless appealed to the Board of Supervisors within 15 days of the Commission's action.

The project site is under a Williamson Act contract and the applicant made application to be allowed to cancel the contract early. On July 8, 2020, the County of Fresno Agricultural Land Conservation Committee (ALCC) considered the cancelation application and voted unanimously to recommend that the Board of Supervisors, who makes the final decision, approve the cancelation application. If the Board of Supervisors denies the Williamson Act cancelation the Use Permits are deemed moot, and development could not continue.

BACKGROUND INFORMATION:

On December 30, 2016, the Applicant filed the subject applications for the Fifth Standard Solar Facility Project, to allow the construction, operation, maintenance, and ultimate decommissioning of:

- A 150-megawatt (MW) photovoltaic (PV) solar energy generation facility that is anticipated to require up to 1,400 acres of the site.

- A 20-MW PV facility that would be located adjacent to Fifth Standard Solar and would require fewer than 200 acres of the site. (AKA Stonecrop Solar Facility)

- A 20-MW battery storage facility that would be located adjacent to Fifth Standard and Stonecrop, and would occupy fewer than 5 acres of the site. (AKA Blackbriar Battery Storage Facility)

The proposed project is located on twelve contiguous parcels (project site), totaling approximately 1,600 acres in unincorporated southwestern Fresno County. A new generation-tie (gen-tie) line of approximately {in length} would be constructed to connect the solar and storage components of the proposed project to Pacific Gas and Electric's (PG&E's) adjacent Gates Substation (point of interconnect). The anticipated lifetime of the proposed project would be 35 years and would be decommissioned at the end of that period or once operations of the facility cease.

If approved, the Project is anticipated to be implemented in three overlapping phases lasting approximately 10 to 11 months total. The first phase would begin with construction of the battery storage facilities and is anticipated to take about five months. Construction of the 150 MW PV generator facility would begin two months after the start on the battery Storage facility and would take approximately eight to nine months. The 20 MW PV Facility would start 6 months after the start on the battery Storage facility and last four to five months.

The site has previously been farmed with tomatoes, wheat, onions, garlic, and cotton, and been fallow in the most recent years. The site has surface water deliveries and there are onsite agricultural ground water wells.

REQUIRED CUP FINDINGS:

Finding 1: *That the site of the proposed use is adequate in size and shape to accommodate said use and all yards, spaces, walls and fences, parking, loading, landscaping, and other features required by this Division, to adjust said use with land and uses in the neighborhood*

	Current Standard:	**Proposed Operation:**	**Is Standard Met (y/n)**
Setbacks	Front: 35 feet Side: 20 feet Rear: 20 feet	Project infrastructure to be set back at least 50 feet from the property line	Yes
Parking	One parking space for every two employees on site; one of which shall be an ADA parking stall (van accessible) located as close	Operations structures would include an adjacent parking area.	Yes

	Current Standard:	Proposed Operation:	Is Standard Met (y/n)
	as possible to the main entrance of main building		
Lot Coverage	No requirement	N/A	N/A
Space Between Buildings	No requirement	N/A	N/A
Wall Requirements	No requirement	N/A	N/A
Septic Replacement Area	100 percent for existing system	Development of any future septic system would be in compliance with the Local Area Management Plan (LAMP)	N/A
Water Well Separation	Building sewer/septic tank: 50 feet; Disposal field: 100 feet; Seepage pit/cesspool: 150 feet	None	N/A

Reviewing Agency/Department Comments Regarding Site Adequacy:

Fresno County Department of Public Works and Planning Site Plan Review: The operational statement indicates up to eight (11) employees will be onsite at the facility during regular operating hours. Off-street parking requirements shall be one parking space for every two (2) employee's onsite. One of which, shall be an ADA van accessible parking stall located as close as possible to the main entrance of main building. All parking spaces for the physically disabled shall be placed adjacent to facility access ramps or in strategic areas where the disabled shall not have to travel behind parking spaces other than to pass behind the parking space in which they parked.

The driveway should be a minimum of 24 feet and a maximum of 35 feet in width as approved by the Road Maintenance and Operation Division. If only the driveway is to be paved, the first 100 feet of the edge of the ultimate right-of-way shall be concrete or asphalt. An encroachment permit shall be required from Road Maintenance, and Operations for any work on the County right-of-way prior to commencement of construction. Any proposed gate that provides initial access to this site shall be setback from the edge of the road right-of-way a minimum of 20 feet or the length of the longest vehicle to enter the site, whichever is greater. Internal access roads shall comply with required widths by the Fire District for emergency apparatus. A dust palliative should be required on all parking and circulation areas.

Any proposed landscape improvement area of 500 square feet or more shall comply with California Code of Regulations Title 23, Division 2 Chapter 2.7 Model Water Efficient Landscape

Ordinance (MWELO) and require submittal of Landscape and Irrigation plans per Governors Drought Executive Order of 2015. The Landscape and irrigation plans shall be submitted to the Department of Public Works and Planning, Site Plan Review (SPR) unit for review and approval prior to the issuance of Building Permits.

No building height or structure erected in this Zone District shall exceed thirty-five (35) feet in height, per Section 816.5.D of the Zoning Ordinance. An Encroachment Permit will be required for any improvements within the County right-of-way prior to commencement of construction. Outdoor lighting should be hooded and directed away from adjoining streets and properties. All proposed signs require submittal to the Department of Public Works and Planning permits counter to verify compliance with the Zoning Ordinance. Off-site advertising for commercial uses are prohibited in the AE (Exclusive Agriculture) Zone District.

Development Engineering section of the Department of Public Works and Planning: According to FEMA FIRM Panel 3250H & 3275H the parcel is not subject to flooding from the 100-year storm. According to U.S.G.S. Quad Maps, there are no existing natural drainage channels adjacent or running through the parcels. Typically, any additional runoff generated by the proposed development of this site cannot be drained across property lines and must be retained or disposed of, per County Standards. An Engineered Grading and Drainage Plan and a grading permit are required. Contact Development Engineering at (559) 600-4022 to talk to a grading engineer.

The comments on standards and regulations above will be included as Project Notes. No other comments specific to the adequacy of the site were expressed by reviewing Agencies or Departments.

Analysis Finding 1:

The “Solar Facility Guidelines” approved by the Fresno County Board of Supervisors on May 3, 2011 and amended on March 13, 2012, May 21, 2013 and December 12, 2017 require a buffer between proposed solar facilities and adjacent agricultural operations, including a 50-foot setback between proposed solar facility improvements from the edges of the property boundaries to the closest structural improvements or equipment. In this case, the Project Site Plans demonstrate that the proposed solar panels would generally be set back from the surrounding property lines by a minimum of 50 feet and confirmation of those setbacks will be reviewed as part of the SPR process, proposed as a Condition of Approval.

The Zoning Ordinance Section 816.5.D requires that no structure shall exceed 35 feet in the Exclusive Agricultural Zone District; however, communication towers and transmission lines are not restricted by this height limit. Therefore, a variance was not required to accommodate such improvements.

Portable restrooms will be provided for construction, decommissioning activities, and during any significant labor-intensive maintenance projects. Adherence to a Site Plan Review (SPR), which has been required as a Condition of Approval, will ensure compliance with the setback requirements and other design standards. Conditions of the SPR may include, but are not limited to, design of parking and circulation areas, access, on-site grading and drainage, fire protection, landscaping, signage and lighting.

Recommended Conditions of Approval:

See Mitigation Measures, Design Measures, and recommended Conditions of Approval attached as Exhibit 1.

Conclusion Finding 1:

Based on the above information, and with adherence to the Conditions of Approval described above and the Mitigation Measures described in the EIR; the site is adequate in size and shape to be able to conform to County Standards and not adversely impact surrounding properties.

Finding 2: *That the site for the proposed use relates to streets and highways adequate in width and pavement type to carry the quantity and kind of traffic generated by the proposed use*

		Existing Conditions	**Proposed Operation**
Private Road	Yes	Three private dirt roads cross the Project site. Tractor Ave. and Phelps run East and West. Trinity Runs North and South	The Project would include a private perimeter roads and interior access ways for construction and operation.
Public Road Frontage	Yes	Lassen Avenue AKA State Route (SR) 269 It is also designated as a planned class II Rural Bike lane.	No change
Direct Access to Public Road	Yes	Lassen Avenue AKA State Route (SR) 269	Access to the Project will be provided at up to three driveways along Lassen Avenue, which will meet applicable County standards.
Road Average Daily Traffic (ADT)		Lassen Avenue AKA State Route (SR) 269 ADT approximately 2,000	During peak construction activities up to 3,200 The Project would not generate a substantial number of trips due to periodic routine operation and maintenance events.
Road Classification		Lassen Avenue AKA State Route (SR) 269 Major Highway	No change
Road Width		Lassen Avenue AKA State Route (SR) 269: two 12-foot-wide travel lanes and paved shoulders (Varies 70 to 100 feet)	Project required to offer for dedication additional right-of-way to complete the ultimate design width of 55 feet from the centerline.
Road Surface		Lassen Avenue AKA	No change

		Existing Conditions	Proposed Operation
		State Route (SR) 269: two 12-foot-wide travel lanes and paved shoulders	
Traffic Trips		Seasonal agricultural-related trips associated with harvesting during years with sufficient rainfall to support a crop, or trips associated with the transport of machinery for disking in years without sufficient rainfall to support harvesting	During the 334 Construction and Decommissioning activities are estimated to generate up to 1200 one-way daily trips.
Traffic Impact Study (TIS) Prepared	Yes	N/A	A Traffic Technical Report was prepared for this project by ESA. dated July 2017.
Road Improvements Required		N/A	Prepare and a construction traffic control management plan to the County and Caltrans Repair County roads which are demonstrably damaged by project traffic.

Reviewing Agency/Department Comments Regarding Adequacy of Streets and Highways:

Development Engineering section of the Department of Public Works and Planning: Lassen Avenue is a state highway (SR 269). Contact Caltrans for requirements. Site access. Access to the site during construction shall be limited to two (2) or possibly three (3) locations. Each access point shall comply with the provision of NPDES. Access from Lassen Ave should be confirmed with Caltrans and not assumed as allowed. A Caltrans encroachment permit will be required for each access point along a state highway. Typically, any existing or proposed entrance gate should be set back a minimum of 20 feet from the road right-of-way line or the length of the longest truck entering the site and shall not swing outward. Any work done within the right-of-way to construct a new driveway or improve an existing driveway will require an Encroachment Permit from the Road Maintenance and Operations Division. For any unpaved or gravel surface access roads, the first 100 feet off the edge of the road right-of-way must be graded and asphalt concrete paved or treated with dust palliative.

Department of Transportation (Caltrans): The state noted that the ultimate width of Lassen Avenue (SR 269) is 110 feet currently it varies in width between 70 and 100 feet. They requested the project provide an offer of dedication for any additional right-of-away along the project's Lassen frontage needed to net 55 feet to the center line. They also noted any points of access or work with the right-of-way would require permits from Caltrans.

No other comments specific to the adequacy of streets and highways were expressed by reviewing Agencies or Departments.

Analysis finding 2:

Access to the Project site would be provided from driveways access points along Larsen Avenue. All access points would have to be constructed through an encroachment permit from Caltrans. Project structures would be set back at least 50 feet from all property lines.

The Project would include internal access ways and points of ingress/egress, which would be subject to Fresno County Fire Department review during the Site Plan Review process.

The majority of heavy shipments will occur during the construction and decommissioning phases of the project. The proposed Project will not generate a substantial amount of trips during its operation. Up to eleven employees may be on site during various periodic maintenance events; however, the number may be as low as zero, and Project-related operational traffic would not cause a significant increase in congestion and would not significantly affect the existing LOS on area roads.

As a required mitigation measure (Exhibit 1 MMRP MM TRA-1), To address potential Traffic impacts that could occur during concentrated construction and decommissioning activities, the applicant is required to prepare, have approved, and implement a Traffic Control Management Plan.

As a required mitigation measure (Exhibit 1 MMRP MM TRA-2 & 3), the developer is required to enter into an agreement to ensure that any County roads which are demonstrably damaged by project traffic are repaired, paved, and/or slurry-sealed, as is necessary. Based on the above information, and with adherence to Mitigation Measures and recommended Conditions of Approval attached as Exhibit 1, the surrounding streets and highways serving the Project site will remain adequate to accommodate the proposed use.

Recommended Conditions of Approval:

In general, there are three transit related conditions:

- Obtain an approved Construction/Decommission Traffic Control Management Plan.
- Obtain encroachment permits for construction of improvements within roadways.
- Perform a Pre-Construction and Pre-Decommissioning Road Survey.
- Enter into a Road Repair Agreement related to road damage from Construction/Decommissioning.

  (For full detailed condition see Mitigation Measures, Design Measures, and recommended Conditions of Approval attached as Exhibit 1.)

Conclusion Finding 2:

Based on the above information, and with adherence to the Conditions of Approval described above and the Mitigation Measures described in the EIR; the site is situated on a major highway which is adequate for the traffic generated by the proposed use. Finding 2 can be made.

Finding 3: That the proposed use will have no adverse effect on abutting property and surrounding neighborhood or the permitted use thereof.

	Size:	Use:	Zoning:
North	Approx.. 260 acres 635 acres	Solar Facility Field Crop	AE-20 (all)
South	230 acres 180 acres 119 acres 39 acres	Vineyard Orchard	AE-20 (all)
Southwest	Approx. 200 acres	Electrical Power Transmission Sub Station	AE-20 (all)
East	77 acres 156 acres 158 acres 294 acres	Orchard Field Crop	AE-20 (all)
West	156.38 acres 312.77 acres 240.82 acres 158.18 acres	Agricultural land Non-irrigated agricultural land owned by Westlands Water District	AE-20 (all)

Reviewing Agency/Department Comments:

Fresno County Department of Agriculture: The Applicant has presented a Decommissioning and Reclamation Plan. The applicant has presented and recognized the need for a pest management plan. The applicant has presented an acknowledgement of the Fresno County "Right-to-Farm" ordinance.

The applicant provided a ten-year crop history. The gross production value for the project sites produced an annual gross value of$ 1,993,764 to $5,218,529 which represents an economic impact to the local area and Fresno County of $6,978,172 to $18,264,852.The property produced well over $200/acre which meets the criteria for prime agricultural land as defined in Government Code Section 51201(c)(4) or (5).

California Department of Fish and Wildlife: Stated prior to the release of the Draft EIR “There are many special-status species that may be present within or adjacent to the project site. These wildlife resources may need to be evaluated and addressed prior to any approvals that would allow ground- disturbing activities. CDFW is concerned that regarding potential impacts

to special status species including but not limited to, the State threatened Swainson's hawk (Buteo swainsoni), and the State threatened tricolored blackbird (Agelalus tricolor)." Their comments on the Draft EIR addressing these two species is discussed in detail in the final EIR.

The Department of Toxic Substances Control (DTSC) in response to the Draft EIR expressed concerns regarding the potential for to historic or future hazardous waste at the project site. The Final draft identifies the studies and provisions that addressed the issues and determined there to be no significant issues.

Westland Water District: The District described the loss of agricultural water allocation from the District upon development of the project and identifies the remaining ability to utilize its infrastructure for the delivery of up to 160-acre feet annually of municipal and industrial water allocations.

San Joaquin Valley Unified Air Pollution Control District: Based on information as presented in the DEIR, after implementation of all feasible mitigation, the project would have a less than significant impact on air quality. Per the DEIR, the project specific annual emissions of criteria pollutants would not exceed any of the following District significance thresholds: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (SOx), 15 tons per year of particulate matter of 10 microns or less in size (PM10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5). Therefore, the District concludes that the Project would have a less than significant impact on air quality when compared to the above-listed annual criteria pollutant emissions significance thresholds. The District also has provided information relating to the projects review under their normal regulatory provisions such as their Rule 9510 etc.

Fresno County Fire: Indicated that the project must comply with California Code of Regulations Title 24– Fire Code. They reminded the applicant that "Prior to receiving your FCFPD conditions of approval for your project, you must submit construction plans to the County of Fresno Public Works and Planning for review. It is the Applicants Responsibility to deliver a minimum of three sets of plans to the FCFPD. There is a mitigation measure proposed requiring the preparation of a Fire Protection Plan.

No other comments specific to land use compatibility were expressed by reviewing Agencies or Departments.

Analysis Finding 3:

The proposed project would be located on approximately 1,600 acres. Surrounding land uses consist primarily of agricultural production, with a solar array facility to the north, and an electrical Transmission substation located southwest of the project.

The visual impact of installing solar panels in this area was also considered. In general this area is not considered to have high visual sensitivity. Lassen Avenue (SR 269) is not a scenic Highway. Interstate 5 which is 2 miles to the west is designated as scenic roadway. The General Plan Policies relating to scenic roadways relates land adjacent to them not in the far distance. The view if visible from I-5 would not be distinctly different and would have the similar row characters of an orchard. There are no mitigation measures or conditions being proposed related to this issue. The project does not pose a significant source of lighting, the usual new construction mitigation measures related to preventing glare and light spilling onto adjacent properties have been included.

To ensure that all project materials are removed from the site following the life of the project and that the installed infrastructure will not become a visual blight on the area. A reclamation plan including the need to provide financial assurances, has been prepared by the Applicant and is a condition of Approval.

Potential impacts to subsurface cultural resources may occur; however, consultation under the provisions of Assembly Bill 52 did not identify any resources or features that should be protected. If such resources are encountered during construction, the developer will stop all work and a qualified archaeologist will inspect the findings and report the results of the inspection to the developer and the County. The developer is also required to discuss how to recognize cultural resources as part of the Worker Environmental Awareness Program (WEAP), which is required training for employees prior to starting construction work at the project site.

Recommended Conditions of Approval:

See Mitigation Measures and recommended Conditions of Approval attached as Exhibit 1.

Conclusion finding 3:

Based on the above information and with adherence to Mitigation Measures and recommended Conditions of Approval attached as Exhibit 1, staff believes the proposal will not have an adverse effect upon surrounding properties. Finding 3 can be made.

Finding 4: That the proposed development is consistent with the General Plan

Relevant Policies:	**Consistency/Considerations:**
Goal LU-A: To promote the long-term conservation of productive and potentially productive agricultural lands and to accommodate agricultural support services and agriculturally related activities that support the viability of agriculture and further the County's economic development goals.	*The DEIR found the project to not be consistent with this Goal from the standpoint that the proposed project would convert an unprecedented amount of Prime farmland in favor of a solar facility.* *This determination can be balanced with identified project site water limitations and groundwater salinity issues, coupled with impending state limitations on the use of groundwater through the Sustainable Groundwater Management Act and the Groundwater Service Areas which will likely cause large areas of productive land to be fallowed. Additional discussion of on-site farming challenges and SGMA occurs in the following pages.*

Relevant Policies:	**Consistency/Considerations:**
General Plan Policy LU-A.1: The County shall maintain agriculturally-designated areas for agriculture use and shall direct urban growth away from valuable agricultural lands to cities, unincorporated communities, and other areas planned for such development where public facilities and infrastructure are available.	The proposed project is not an urban growth project. The Agricultural designation remains and agricultural uses may be utilized at the site after the project's life (35 Years) if water sources become sustainable.
Policy LU-A.2: The County shall allow by-right in areas designated Agriculture, activities related to the production of food and fiber and support uses incidental and secondary to the on-site agricultural operation. Uses listed in Table LU-3 are illustrative of the range of uses allowed in areas designated Agriculture.	*Not Consistent from the standpoint of the EIR. The project is not an activity related to the production of food and fiber, and solar facilities are not listed in Table LU-3 of the General Plan Policy Document. Therefore, the project is not consistent with this policy.* *The project can be considered consistent in that water allocation challenges may cause fallowing of the project site, and project development represents what could be considered a temporary use of the property, permitting eventual farming activities when the solar facility ceases operation, providing the landholder's the ability to successfully farm other holdings that would otherwise be impacted with continued farming in the project area.*
General Plan Policy LU-A.3: The County may allow by discretionary permit in areas designated Agriculture, special agricultural uses and agriculturally related activities, including value-added processing facilities, and certain non-agricultural uses listed in Table LU-3. Approval of these and similar uses in areas designated Agriculture shall be subject to the following applicable criteria: a) The use shall provide a needed service to the surrounding agricultural area which cannot be provided more efficiently within urban areas or which requires location in a non-urban area because of unusual site requirements or operational characteristics; b) The use should not be sited on productive agricultural lands if less productive land is available in the vicinity; c) The operational or physical characteristics of the use shall not have a detrimental impact on water resources or the use or	a) The proposed use will operate more efficiently in a non-urban area due to the property size required to produce electricity with solar panels and the availability of large undeveloped land in the subject area. b) The Land is less productive than other sites due to the lack of water resources and groundwater salinity issues. c) The EIR found available water supplies to satisfy the water demands of the Project, while still meeting other existing and planned future uses. d) Based on demographics and experience with similar solar array projects on the west side of the County, most of the construction workforce is expected to come from the Fresno regional area. *The DEIR found the project to not be consistent with this policy. Solar facilities are*

Relevant Policies:	Consistency/Considerations:
management of surrounding properties within at least one quarter (1/4)-mile radius; d) A probable workforce should be located nearby or be readily available.	*not included as a non-agricultural use listed in Table LU-3.* *From a general policy standpoint there are a broad range of uses that could be more appropriately developed on agricultural lands, away from urbanized areas due to the need to assemble large acreages for project development and within proximity to supporting infrastructure. Solar farms need large land areas for uninterrupted site development and site management, and the presence of the existing Gates Substation and its associated infrastructure, which serves other solar facilities in the vicinity, allows reasonable conclusion that the project can be compatible with this policy.*
General Plan Policy LU-A.12: County shall seek to protect agricultural activities from encroachment of incompatible land uses.	Solar panels are will adhere to a 50-foot setback policy from adjacent agricultural operations.
General Plan Policy LU-A.13: County shall require buffers between proposed non-agricultural uses and adjacent agricultural operations.	The Project site will have perimeter fencing for security purposes and to separate the use from farming and other non-agricultural operations on adjacent properties. Further, the Project will have an at least 50-foot-wide buffer between the proposed use and adjacent operations.
General Plan Policy PF-C.17: County shall undertake a water supply evaluation.	The operation of the use after construction would consume a significantly smaller volume of water. Section 4.9 of the EIR analysis considered ground water, surface water, and water quality issues. The conclusions reached was that the project would have a less than significant impact and that no mitigation is necessary.
Policy PF-C.3: To reduce demand on the county's groundwater resources, the County shall encourage the use of surface water to the maximum extent feasible.	*The DEIR found the project not to be consistent with this policy. The proposed project would rely on existing onsite wells for water use during construction, operation, and decommissioning. Construction water demand would be 300 acre-feet total and operations would require 4 to 10 acre-feet per year. Decommissioning water demand would be comparable to construction demand at 300 acre-feet. From 2008 through 2017, groundwater use at the site has averaged 2,800 acre-feet per year. However, depending*

Relevant Policies:	Consistency/Considerations:
	on available quantities, the Applicant may also be able to obtain water from the WWD. Therefore, the proposed project would not be consistent with this policy, as it would potentially continue to use groundwater. *Comparatively, and considering broader policy interpretations, the use of groundwater in the volumes described above and associated with site development or reclamation are less than 12 percent of the average acre-feet used during active farming. It is generally-acknowledged that photovoltaic solar facilities are low-water uses compared to agricultural operations.*
General Plan Policy HS-B.1: The County shall review project proposals to identify potential fire hazards and to evaluate the effectiveness of preventive measures to reduce the risk to life and property.	The project was routed to the Fresno County Fire Protection District for review. They did not provide any preliminary comments; however, the developer will be required to obtain Fire District approval prior to construction, in accordance with Fresno County development regulations. There is also a mitigation measure proposed requiring the preparation of Fire Protection Plan.
General Plan Policy HS-E.2: The County shall ensure that new development, including public infrastructure projects does not create safety hazards such as glare from direct or reflective sources, smoke, electrical interference, hazardous chemicals, or fuel storage in violation of adopted safety standards.	Section 4.8 of the EIR evaluated hazards and hazardous materials. Only one potential issue was identified that needed mitigation to reduce the potential impacts to less than significant. The material contained within photovoltaic (PV) modules has some elements that could be hazardous if the unit is broken open. Prior to construction a broken (PV) model detection and removal plan shall be prepared.
General Plan Policy HS-G.1: The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses.	Both stationary and mobile noise impacts from construction and operations were analyzed in section 4.12 of the EIR. A proposed mitigation measure requires the developer to use best practices for equipment staging; and to operate in compliance with the Fresno County Noise Ordinance at all times.
General Plan Policy HS-F.1: The County shall require that facilities that handle hazardous materials or hazardous wastes be designed, constructed, and operated in accordance with applicable hazardous materials and waste management laws and regulations.	Review of this project did not identify any designs or operational standards that would conflict with existing regulations regarding hazardous materials and waste management. Further consideration is also provided during the subsequent required site plan review of final construction plans.

Relevant Policies:	Consistency/Considerations:
General Plan Policy TRA-A.3: The County shall require that new or modified access to property abutting a roadway and to intersecting roads conform to access specifications in the Circulation Diagram and Standards section.	Prior to construction, the developer is required to prepare a Traffic Control and Management Plan, The Developer shall monitor and coordinate with the contractor during construction to insure successful implementation of the Plan.

Reviewing Agency Comments:

Westlands Water District: The district indicated that since the Applicant is proposing a solar development, the Applicant is eligible to receive water through the District's Municipal and Industrial (M&I) supply and the land will continue to have access to the District's distribution system. The Applicant must comply with the District's Backflow Prevention guidelines for this connection to the water system.

The District had no objections to the Project; however, it was noted that prior to initiating construction, the Applicant shall be required to contact Underground Service Alert (811) so District staff can locate and mark its facilities. The District has water distribution Lateral Line PV-9, which originates to the west of the site at the Coalinga Canal and delivery points PV9-1.5-E2.5N, PV9-1.5E-3.0, PV9-1.5E-3.0B, and PV9-1.5E-3.2.

Department of Agriculture: The Agriculture and Land Use Element of the General Plan states that, "since most of the county's highly productive agricultural soils could be easily developed by urban, rural residential, and other non-agricultural uses, careful land use decision-making is essential to minimizing the conversion of productive agricultural land to non-agricultural uses." The conversion of agricultural land diminishes the County's agricultural production capacity and economic viability and would detrimentally impact surrounding agricultural operations to the extent that further losses in production may occur.

The Fresno County Department of Agriculture further opined that the project posed a "Potentially Significant Impact", that "there are no mitigation measures available to address this impact." That it presents a "Significant and unavoidable Impact." The Department of Agriculture opposes this and all projects that will remove prime agricultural lands from production.

Analysis Finding 4:

General Plan Policies

This proposal is consistent with the General Plan Policies LU-A.1. The project is not an urban use, large solar facilities, such as this application, require placement outside of urban areas to take advantage of the large stretches of flatland where panels may be constructed. The Agricultural designation remains, and agricultural uses may be resume at the site after the projects life (35Years) if water sources become sustainable. A reclamation plan to reestablish agricultural uses after the project life has been prepared and is a condition of approval for the project.

General Plan Policies LU-A.3 addresses the criteria to be considered when permitting agriculturally related and non-agricultural projects by discretionary permits. These criteria are meet as the use requires very large acreage, and is deemed less productive land due to water limitations and groundwater salinity issues, the project will reduce water impacts on surrounding

land, and has adequate workforce for construction from Fresno for the construction with no staffing being required for routine operations, only for periodic maintenance.

Further, this project site has been identified as a preferable location for solar power due to poor soil quality. Allowing an alternative use for this marginal farmland discourage the placement of similar facilities on more productive agricultural land, which General Plan Policies have been designed to protect.

The proposed development would result only in a temporary conversion of agricultural land which could be restored to the prior farming state upon cessation of the solar use. Said agricultural land currently receives surface agricultural irrigation water from Westlands Water District. Upon cessation of agricultural use, the project will no longer be eligible for agricultural water deliveries but will be eligible for up to 160-acre feet of municipal and industrial water. The project site is under a Williamson Act contract and the applicant made application to be allowed to terminate the contract early. The Agricultural Land Conservation Committee considered the early termination application and recommended that the Board of Supervisors, who makes the final decision, to allow the land to be withdrawn from the program early through cancellation.

Large solar facilities, such as this application, require placement outside of urban areas to take advantage of the large stretches of flatland where panels may be constructed. Further, this project site has been identified as a preferable location for solar power due to poor soil quality. Allowing an alternative use for this marginal farmland discourage the placement of similar facilities on more productive agricultural land, which General Plan Policies have been designed to protect.

It should be noted that the Environmental Impact Report determined that there were significant unavoidable impacts. This included:

- Conversion of prime farmland to a non-agricultural use,
- Conflicts with zoning for agriculture and a Williamson Contract, and
- Conversion of Farmland to non-agricultural use.

Specific General Plan Goals and Policies that the DEIR determined inconsistent were:

- Goal LU-A which in part promotes the long-term conservation of productive agricultural lands

- Policy LU-A.2 which discusses by-right activities on agricultural lands related to the production of food and fiber.

- Policy LU-A.3 which states the County may allow certain agricultural, supportive agricultural and non-agricultural uses on land designated for agriculture subject to specific criteria.

- Policy PF-C.3: which seeks to reduce demand on the County's groundwater resources by encouraging the use of surface water to the maximum extent feasible.

The project would convert approximately 1,600 acres of prime farmland to non-agricultural uses. Mitigation was required to provide a reclamation plan to return the site to agricultural use after completion of the project life (35 years). However, it was determined that the mitigation did not reduce the impact to a less than significant level.

A discussion of these goals and policies and their consistency/inconsistency are discussed in in the table located on the preceding pages, but it is important to note the distinction between the these policies framed as significant impacts in the CEQA document versus a broader policy discussion and considering external factors that influence and restrict successful farming of the project site. Through the EIR process CEQA permits decision-makers to adopt a Statement of Overriding Considerations. The project EIR documents acknowledged a potential for significant and unmitigable impacts to agricultural land with project development, but that does not restrict the decision-making body from finding the project consistent with the County's General Plan based on the additional General Plan Policy discussion provided.

Impacts determined in the EIR and corresponding overriding considerations are based on a more generalized environmental view of agriculture, whereas a determination of consistency with the General Plan policies may take a more comprehensive detailed consideration of the various factors related to the Project. Hence, determining that it is necessary to make Findings of Fact and Statement of Overriding Considerations on agricultural issues and finding that a project is consistent with the General Plan's agricultural policies are not necessarily incompatible with each other.

Regarding Policies HS-G.1, HS-F.1, and TRA-A.3, which relate to noise impacts, hazardous materials handling, and conformity to the circulation plan, the EIR prepared for this project identified that this project could have potentially significant impacts in violation of these policies. However, adoption of the proposed Mitigation Measures will ensure that the Project would be in compliance with these policies. As discussed under Finding 2, the developer is required to prepare a Traffic Management Plan, which will ensure that the initial construction and subsequent decommissioning traffic does not adversely impact the circulation system.

On May 3, 2011, the Fresno County Board of Supervisors took action requiring supplemental application information based on the Nine-Point Solar Facilities Guidelines to be provided by solar utility applicants as part of their project submittal packages. The Guidelines were amended by the Board on March 13, 2012 and May 21, 2013 to include historical information on the agricultural use of the property, crop yield information, the source of water, the soil type, information on improvements and site buffering, the submittal of a Reclamation Plan, pest management information, and acknowledgement of the County's Right-to-Farm Ordinance. Required supplemental application information includes historical information on the agricultural use. The most recent amendment (December 12, 2017) required solar applicants to commit to make all reasonable efforts to establish a point of sale in Fresno County for equipment and construction-related items necessary for the project and to hire employees from the local workforce. They also require the developer to identify the weight of shipments and commit to purchasing products and equipment from local (Fresno County) manufacturing facilities and venders.

County of Fresno Agricultural Land Conservation Committee (ALCC)

The ALCC is an advisory body to the Board of Supervisors comprised of agricultural professionals and those involved with or having expertise in the farming industry. One charge of the ALCC is to consider cancellation requests to remove lands from Williamson Act Contract and, make recommendations to the Board of Supervisors on such requests.

On July 8, 2020, the ALCC considered the cancellation application for the proposed project. The ALCC meeting included discussion of the project site's unique water constraints, subsequent fallowing of the land and the ability to reclaim the land for agricultural use in the future after site decommissioning. At the meeting, a spokesperson for the family landholdings

discussed the general farming challenges with limited and unreliable surface water allocations and the impending groundwater pumping restrictions associated with the Sustainable Groundwater Management Act. In only four of the past 30 years has the family farming operation received a 100% surface water allocation. Also, citing tomato crops that have been grown on site, the average surface water allocations that have been received for the project site do not provide enough acre-feet of water to successfully grow this type of crop. Dry-farmed wheat, as another example, based on production and general profit margins, is equivalent to fallowed agricultural land. Based on these factors, the farming operation is never farming 100% of their holdings. Nevertheless, the landowner maintains a desire is to hold on to the land, thus the arrangement for a lease agreement with the solar developer, in hopes that statewide water distribution issues may be resolved in the coming decades.

Some committee members, in their closing statements, supported these concerns regarding water availability, stating that loss of available ground and surface water is a significant concern. Committee members also expressed support for the proposal to develop land proposed for fallowing with a solar facility to allow additional cashflow flexibility for the farming operation. After closing public testimony, the Committee voted unanimously to recommend that the Board of Supervisors approve the cancellation request. The Board will take final action on the cancellation request.

The Sustainable Groundwater Management Act (SGMA)

SGMA, signed into law in 2014, established a new structure for managing California's groundwater resources at a local level by local agencies. SGMA required the development and implementation of groundwater sustainability plans to ensure these local agencies achieved sustainability within a twenty-year planning horizon. Sustainability is measured using metrics, developed by the plans, for sustainability indicators such as groundwater levels and water quality. The subject property is located within the Westlands Water District Groundwater Sustainability Agency where groundwater levels, water quality, and subsidence are of concern.

In 2019, the Public Policy Institute of California published a report entitled "Water and the future of the San Joaquin Valley" which studied the eight counties of the Southern San Joaquin Valley and the potential impacts they face with respect to implementation of the SGMA. The report found that more than half a million acres of irrigated cropland would need to be removed from production in the next twenty years to offset overdraft conditions and their associated undesirable effects. Understanding the importance of strategic land idling and the opportunity for beneficial alternative land uses, the PPIC recognized solar energy production as one of the few options for generating significant non-farm revenues on lands retired to save water and the PPIC recommended as a priority of action increased regulatory flexibility including the relaxing of restrictions on the retirement of prime farmland.

As identified in the EIR, Westlands Water District anticipates receiving only 50% of its contractual water from the Central Valley Project in any average year. The current landowner has chosen to divert all of their surface water allocation to other land holdings that are more profitable, except in years where the allocation is close to 100%. This decrease in surface water supply use increases the demand on groundwater in order to continue agriculture production on this prime farmland. This use of groundwater may be limited in the future if lands without sufficient surface water supplies are forced out of production in order to reach sustainability. Utilizing an alternative land use such as solar energy production provides a unique opportunity for a temporary conversion of prime land into a productive use while water supply strategies are being developed.

Staff should also state that the Pest and Weed Control, and Reclamation Plans have been reviewed by the Department of Public Works and Planning and were determined to be sufficient to prevent the general operation of this solar facility from becoming a nuisance on adjacent properties and are made conditions of approval.

Based on the above information, acknowledging that the project's CEQA document identified some General Plan inconsistencies, but also acknowledging there are restrictions on the properties water allocations that may make continued farming infeasible to the detriment of the landowner's entire holdings, and with the ability of the decision-making body to adopt a Statement of Overriding Considerations regarding the CEQA document, staff believes the proposal is consistent with the Fresno County General Plan.

Recommended Conditions of Approval:

See Mitigation Measures and recommended Conditions of Approval attached as Exhibit 1.

Conclusion finding 4:

Based on the proposed mitigation measures and unique circumstances it can be determined that the project is consistent the General Plan including policies specifically related to agriculture, and with an adoption of a Statement of Overriding Considerations as it pertains to the EIR, that Finding 4 can be made.

Finding 5: *That the conditions stated in the resolution are deemed necessary to protect the public health, safety and general welfare.*

Reviewing Agency Comments:

Refer to comments under Findings 1 through 4 of this report.

Analysis Finding 5:

Per Section 873-F of the Zoning Ordinance, Finding 5 addresses the question of whether the included Conditions can be deemed necessary to protect the public health, safety and general welfare of the public and other such conditions as will make possible the development of the County in an orderly and efficient manner and in conformity with the intent and purposes set forth in this Division. The environmental mitigation measures, conditions of approval and project notes for the project are contained in Exhibit 1.

The mitigation measures are also listed in the Mitigation Monitoring & Reporting Program prepared in conjunction with Environmental Impact Report No. 7257 which was required to be prepared for the project under CEQA. The mitigation measures proposed for this project are required to reduce the identified adverse impacts to a level that can be considered to be "less than significant". Specific details regarding the need for mitigation measures are discussed in the EIR. The Conditions of Approval are necessary to make the project consistent with the County's policies, regulations and standards. The conditions for the project will be implemented and further augmented through the Site Plan Review process required for this project. The Site Plan Review process and requirements are contained in Section 874 of the Fresno County Zoning Ordinance.

The Project Notes listed in Exhibit 1 represent existing regulations to which the Project is subject and are provided to aid the Applicant/Developer during construction and/or operation.

Recommended Conditions of Approval:

See Mitigation Monitoring, Conditions of Approval and Project Notes attached as Exhibit 1.

Conclusion Finding 5:

The required conditions reflect CEQA regulation and the County's policies, regulations and standards necessary to protect the public. Hence, Finding 5 can be made.

PUBLIC COMMENT:

The County received one letter in support of the project from Jack Castro, City Manager, City of Huron.

CONCLUSION:

Based on the factors cited in the analysis, it is recommended to adopt the findings of fact and certify EIR 7257. It has also recommended that the required Findings for granting the CUPs be made, and Unclassified Conditional Use Permit Nos. 3562, 3563, & 3564 be approved, subject to the Mitigation Measures and recommended Conditions of Approval.

PLANNING COMMISSION MOTIONS:

Recommended Motion (Approval Action)

1. Move to approve the CEQA Findings of Fact and Statement of Overriding Considerations (Exhibit 2) and the Mitigation Monitoring and Reporting Program and Conditions of Compliance Reporting Matrix (Exhibit 1) prepared for Unclassified Conditional Use Permit Applications No. 3562,3563, and 3564 based on the Findings above;

2. Move to determine that the required Findings discussed above can be made for the proposed Project and move to approve Unclassified Conditional Use Permit Applications No. 3562,3563, and 3564, with Conditions and notes;

3. Move to approve the Reclamation Plan dated September 2016 (Exhibit 7) for the proposed Project;

4. Pursuant to Zoning Ordinance Section 873.F, the Conditions incorporated into this Project are necessary for public health, safety, and general welfare; and

5. Direct the Secretary to prepare a Resolution documenting the Commission's action and direct staff to file a Notice of Determination for the approved Project.

Alternative Motion (Denial Action)

- Move to not certify the EIR;

- Move to determine that the required Findings cannot be made (state basis for not making the Findings) and move to deny Unclassified CUP Nos. 3562, 3563, and 3564; and

- Direct the Secretary to prepare a Resolution documenting the Commission's action.

Mitigation Measures, Recommended Conditions of Approval and Project Notes:

See attached Exhibit 1.

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EXHIBIT 1

Fresno County

Fifth Standard Solar Project

Unclassified Conditional Use Permits No. 3562,3563, and 3564

- Environmental Impact Report No. 7257 Mitigation Monitoring and Reporting Program
- Conditions of Approval (Compliance Matrix)
- Project Notes (Mandatory Requirements)

Mitigation, Monitoring and Reporting Program [1]

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
Section 4.1 Aesthetics			
MM AES-1: Lighting. All outdoor lighting shall be hooded, directed downward, and permanently maintained to not shine towards adjacent properties and roads.	The Developer	Prior to construction	The final design plans shall be approved by the County prior to the issuance of any building or grading permits. Maintenance of the lighting shall be ensured by the applicant throughout the life of the proposed project, through regular inspections.
Section 4.2 Agriculture			
MM AG-1: Reclamation Plan. Prior to any ground-disturbing activity, the Applicant shall enter into a Reclamation Agreement to implement a Reclamation Plan for each Conditional Use Permit for restoration of agricultural land. The Plan shall include the following standards: • Final reclamation actions shall require that agricultural land be returned to a fertility level equivalent to that level required to support crops recommended by an	The Developer, Property Owner, and the County	Prior to construction or issuance of any grading or other development permits	The Reclamation plan shall be approved by the County prior to ground-disturbing activities. Success of the reclamation actions shall be determined by the County through inspections or reports given by the Developer. Agreements to implement the Reclamation Plan shall be recorded as a covenant with the property.

[1] Abbreviations are listed at the end of the table. For the purposes of this document the terms “Applicant”, “Property Owner”, “Developer”, “Contractor” or “Operator” shall be interchangeable in that the parties affecting or allowing the uses and improvements which are a part of the project shall be mutually and individually responsible for implementing the mitigation measures.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
agricultural consultant through consultation with the County. • Revegetation fertility level success shall be achieved when the productive capability of the revegetated area is equivalent to or exceeds, for two equivalent crop years, that of the pre-project condition or any similar crop production in the region, as determined by an agricultural consultant or as compared to the baseline onsite agricultural production, as determined by the County.			
Section 4.3 Air Quality			
MM AIR-1: Air Quality Best Management Practices (BMPs). During construction and decommissioning, the following measures shall be implemented: • Ozone precursor emissions from mobile construction equipment shall be controlled by maintaining equipment engines in good condition and in proper tune per manufacturers' specifications. Equipment maintenance records and equipment design specification data sheets shall be kept onsite during construction. • Electricity from power poles shall be used whenever practicable instead of temporary diesel- or gasoline-powered generators to reduce the associated emissions. • To reduce construction vehicle (truck) idling while waiting to enter or exit the site, the contractor shall submit a traffic control plan pursuant to Mitigation Measure TRA-1 that will describe in detail safe detours to prevent traffic congestion to the best of the project's ability, and provide temporary traffic control measures during construction activities that will allow both	The Developer and Contractor	During construction and decommissioning	During construction and decommissioning activities documentation and compliance with the mitigation measure and air quality best management practices shall be recorded and kept on file.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
construction and on-street traffic to move with less than 5-minute idling times. • Construction equipment will use only California-certified diesel or gasoline fuels. • The Applicant will use construction equipment that is at the Tier 4 interim emission level for equipment less than or equal to 81 horsepower (hp) and Tier 3 engines for all other equipment.			
MM AIR-2: Voluntary Emission Reduction Agreement (VERA). a. The Developer shall enter into a Voluntary Emission Reduction Agreement (VERA) with the SJVAPCD prior to the issuance of ministerial construction/grading permits or stagger the construction periods for the three facilities to avoid a significant impact. Proof of payment to the SJVAPCD shall be provided prior to issuance of grading permits for construction. If "staggering" of the timing of the construction periods is used to avoid a significant impact, the Developer shall provide documentation to the County prior to the commencement of construction activities to confirm that construction emissions would be reduced to below the applicable significance thresholds. b. Twelve months prior to initiation of decommissioning activities, the Applicant shall prepare additional analysis to determine air quality impacts from the proposed decommissioning activities. If the emissions will exceed the SJVAPCD thresholds of significance, the Applicant shall enter into a new VERA with the SJVAPCD to offset the decommissioning emissions below the thresholds of significance.	The Developer and SJVAPCD	Prior to construction and decommissioning	Proof of payment to the SJVAPCD shall be completed prior to issuance of building and grading permits. The Developer shall enter into a VERA or stagger the construction periods. The Developer will conduct the additional analysis for the decommissioning activities and submit it to the SJVAPCD for review. If it is determined a VERA is needed for decommissioning activities to reduce potentially significant construction-related air quality impacts, the Developer shall receive proof of payment from the SJVAPCD prior to issuance of a grading permit.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
Section 4.4 Biological Resources			
MM BIO-1: General Measures for the Avoidance and Protection of Biological Resources. During construction, operation and maintenance, and decommissioning of the facility, the operator or contractor shall implement the following general avoidance and protective measures to protect San Joaquin kit fox and other special-status wildlife species: • The operator shall limit the areas of disturbance. Parking areas, new roads, staging, storage, excavation, and disposal site locations shall be confined to the smallest areas possible. All proposed impact areas, including solar fields, staging areas, access routes, and disposal or temporary placement of spoils, shall be delineated with stakes and/or flagging prior to construction to avoid special-status species where possible. Construction- related activities, vehicles, and equipment outside of the impact zone shall be avoided. • These areas shall be flagged, and disturbance activities, vehicles, and equipment shall be confined to these flagged areas. • Spoils shall be stockpiled in disturbed areas that lack native vegetation. BMPs shall be employed to prevent erosion in accordance with the project's approved Stormwater Pollution Prevention Plan (SWPPP). All detected erosion shall be remedied within two (2) days of discovery or as described in the SWPPP. • To prevent inadvertent entrapment of wildlife during construction, all excavated, steep-walled holes or trenches with a 2-foot or greater depth shall be covered with plywood or similar materials at the close of each working day or provided with one or more escape	The Developer and Contractor	Prior to and during construction and decommissioning activities	Protected areas shall be staked and flagged for avoidance, as determined by a qualified biologist, prior to any earth moving activities onsite. The biological monitor shall regularly inspect the project area for special-status species and, as applicable, handle any special status species found on site, in accordance with this mitigation measure and all applicable state and federal laws.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they shall be thoroughly inspected by the approved biological monitor for trapped animals. If trapped animals are observed, escape ramps or structures shall be installed immediately to allow escape. If a listed species is trapped, the United States Fish and Wildlife Service (USFWS) and/or California Department of Fish and Wildlife (CDFW) shall be contacted immediately. • All construction pipes, culverts, or similar structures with a 4-inch or greater diameter that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for special-status wildlife or nesting birds before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If an animal is discovered inside a pipe, that section of pipe shall not be moved until the Lead Biologist has been consulted and the animal has either moved from the structure on its own accord or until the animal has been captured and relocated by the Lead Biologist. • Vehicles and equipment parked on the sites shall have the ground beneath the vehicle or equipment inspected for the presence of wildlife prior to moving. • Vehicular traffic shall use existing routes of travel. Cross-country vehicle and equipment use outside of the project properties shall be prohibited. • A speed limit of 20 miles per hour shall be enforced within all construction areas. • A long-term trash abatement program shall be established for construction, operations, and decommissioning and submitted to the County. Trash and food items shall be contained in closed containers and removed daily to reduce the attractiveness to			

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
wildlife such as common raven (*Corvus corax*), coyote (*Canis latrans*), and feral dogs. • Workers shall be prohibited from bringing pets and firearms to the project site and from feeding wildlife in the vicinity. • Intentional killing or collection of any wildlife species shall be prohibited.			
MM BIO-2: Reduce Construction-related Impacts to Nesting Birds. Ensure that active nests of raptors and other special-status nesting birds are not affected as a result of the proposed project. If construction work is scheduled to take place outside of the avian nesting season (September 16 through January 31), no action would be required to protect nesting birds. If any activities that could harm birds or their nests (e.g., clearing temporary workspaces; staging or stockpiling machinery or supplies; parking vehicles, equipment, or trailers; grading or leveling; creating stockpiles of dirt or gravel; or any activity that could cover existing habitat or disrupt surface soils) occur during the avian nesting season (February 1 through September 15), the following measures shall be implemented to avoid impacts on nesting raptors and other protected and common birds: • No more than 14 days prior to construction, a qualified wildlife biologist shall conduct preconstruction surveys of all construction sites to determine if birds or nests are present. Surveys may be phased as construction is phased, so that each section is surveyed no more than 14 days prior to the start of construction in that area.	The Developer and Qualified Wildlife Biologist	Prior to and during construction	If construction work occurs during the avian nesting season, the preconstruction surveys shall be conducted by a qualified biologist and if any active nests are found, the no-disturbance buffer shall be marked prior to any ground-disturbing activities.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
• If active nests are found during preconstruction surveys, a no-disturbance buffer shall be created around nests until it is determined that all young have fledged or until the recognized nesting season has ended (i.e., September 15 annually). The size of any employed buffers will vary based on the species that is nesting, the status of the nest, site conditions, and work to be completed during the active period of the nest. All buffers will be appropriately sized, based on USFWS published recommendations to avoid take to the nest. The size of the buffer zones and types of construction activities restricted in these areas could be further modified during construction in coordination with CDFW and shall be based on the existing level of noise and human disturbance on the project site. • If preconstruction surveys indicate that nests are inactive, or potential habitat is unoccupied during the construction period, no further action is required. Trees and shrubs within the construction footprint determined to be unoccupied by nesting birds or that are outside the no-disturbance buffer for active nests could be removed. • To prevent impacts to SWHA, construction within one half-mile of the windbreak identified in photo point 4c of the Biological Survey (ESA 2016) shall occur after the bird nesting season (September 15). If construction cannot be deferred until this date, a preconstruction survey shall be performed to determine if SWHA are present. If no SWHA are detected by the survey, then construction may proceed, otherwise it must be deferred until after the nesting season. If SWHA are detected, then activities shall not proceed until after September 15.			

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
MM BIO-3: Reduce Potential for Avian Collisions with Power Lines. Avian Power Line Interaction Committee (APLIC) Guidelines in accordance with Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012) will be incorporated into the power line design to minimize the likelihood of avian electrocutions. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with APLIC guidance to reduce the likelihood of large bird electrocutions and collisions (APLIC 2012).	The Developer	Pre-construction, during final design	The Developer shall confirm that design implements current methodologies for the reduction of avian collisions and electrocution.
MM BIO-4: Reduce Avian Collisions with Photovoltaic Array. • Visual deterrents to encourage bird avoidance of the project site will be installed. These deterrents will be made of a material that is both reflective and highly visible, such that the material reflects ambient light and is stimulated by air movement. The effect of such installation will create the visual impression of continuous and varied movement, which has been shown as an avian deterrent in agricultural applications. An example of the types of material that could be used includes reflective tape. Within 30 days after project commissioning, materials will be installed in 50-acre blocks within the solar facility on a 3-month trial basis to examine panel performance issues. Following the initial 3-month period, visual deterrents will either be adjusted to reduce performance issues and reexamined on continuing 3-month basis, or if adjustments are not deemed necessary to improve panel performance, deployed on the remainder of the site and maintained for the life of the project or until determined infeasible (based on the definition of	The Developer	During construction	The Developer shall ensure that the visual deterrents are installed at the project site within 30 days after project commissioning.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
"feasible" in CEQA Guidelines Section 15364) or ineffective by the project owner in consultation with CDFW and the County. • Panels shall include, if feasible, a light-colored, ultraviolet (UV)-reflective, or otherwise nonpolarizing outline, frame, grid, or border, which has been shown to substantially reduce panel attractiveness to aquatic insects, which in turn would reduce the attractiveness of the panels to birds that feed on the aquatic insects (Horvath et al. 2010) in order to reduce avian mortality by avoiding collisions with panel faces (NFWFL 2014).			
MM BIO-5 Reduce Impacts to Nocturnal Wildlife from Lighting. • No lighting shall be placed near or oriented towards any transmission lines running through the project site to avoid affecting wildlife that may use this area for nighttime movement. • Narrow spectrum bulbs shall be used to limit the range of species affected by project lighting.	The Developer	Prior to construction, during final design	The Developer shall ensure during the final design that no lighting will be placed near or oriented towards any transmission lines.
Section 4.5 Cultural Resources			
MM CUL-1: Retain a Qualified Archaeologist: The Applicant/contractor shall retain a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology, to carry out all Mitigation Measures related to archaeological and historical resources prior to the issuance of demolition or grading permits. The Applicant shall ensure that the qualified archaeologist has conducted a Cultural Resources Awareness Training for all construction personnel working on the proposed project. The training shall include an overview of potential cultural resources that could be encountered during ground disturbing	The Developer, Contractor, and Qualified Archaeologist	The qualified archaeologist shall be retained prior to issuance of building permit and shall be retained throughout construction activities.	The Developer shall ensure that a qualified archaeologist is retained throughout construction and implements the Cultural Resources Awareness Training to all construction workers prior to any earth moving activities. The training shall be implemented for any new construction worker on their first day on the construction site throughout all construction activities.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
activities to facilitate worker recognition, avoidance, and subsequent immediate notification to the qualified archaeologist for further evaluation and action, as appropriate, and penalties for unauthorized artifact collecting or intentional disturbance of archaeological resources. The qualified archaeologist shall conduct construction worker archaeological resources sensitivity training prior to the start of ground-disturbing activities. In the event that construction is phased, additional trainings shall be conducted for all new construction personnel. The training sessions shall focus on the recognition of the types of archaeological resources that could be encountered at the project site and the procedures to be followed if they are found. Documentation shall be retained demonstrating that all construction personnel attended the training.			
MM CUL-2: Inadvertent Discovery of Archaeological Resources or Tribal Cultural Resources: If prehistoric or historic-era cultural resources are encountered during the course of grading or construction, all ground-disturbing activities within 50 feet of the find shall cease. The qualified archaeologist shall evaluate the significance of the resources and recommend appropriate treatment measures. Per CEQA Guidelines Section 15126.4(b)(3)(A), project redesign and preservation in place shall be the preferred means to avoid impacts to significant archaeological sites. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures in consultation with Fresno County, which may include data recovery or other appropriate measures. Fresno County shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native	The Developer Qualified Archaeologist, Native American representative, and County	During construction	The qualified archaeologist shall evaluate the significance of the resources and recommend appropriate treatment measures should any discovered archaeological or tribal resources be discovered. If it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures in consultation with Fresno County, which may include data recovery or other appropriate measures. Fresno County shall consult with appropriate Native American representatives in determining appropriate treatment.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
American in nature. Archaeological materials recovered during any investigation shall be curated at an accredited curational facility. The qualified archaeologist shall prepare a report documenting evaluation and/or additional treatment of the resource. A copy of the report shall be provided to Fresno County and to the Southern San Joaquin Valley Information Center. Construction can recommence based on direction of the qualified archaeologist.			
MM CUL-3: Inadvertent Discovery of Unmarked Burials. If human remains are uncovered during project construction, the project operator shall immediately halt work within 50 feet of the find, contact the Fresno County Coroner to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.4 (e)(1). If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified, in accordance with Health and Safety Code Section 7050.5(c), and Public Resources Code (PRC) 5097.98 (as amended by Assembly Bill 2641). The NAHC shall designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, and the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in PRC Section 5097.98 with the MLD regarding their recommendations for the disposition of the remains, taking into account the possibility of multiple human remains.	The Developer and County	During construction	If any discovered human remains onsite, construction work shall be halted within 50 feet of the find. The Fresno County Coroner will be contacted to evaluate the remains. the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
Section 4.6 Geology and Soils			
MM AG-1: Reclamation Plan. See Section 4.2, Agriculture	See Section 4.2, Agriculture	See Section 4.2, Agriculture	See Section 4.2, Agriculture
MM GEO-1: Retain a Qualified Paleontologist. A qualified paleontologist, defined as one meeting the Society of Vertebrate Paleontology Standards (the "Qualified Paleontologist") shall be retained prior to the issuance of grading permits. The Qualified Paleontologist shall provide technical and compliance oversight of all work as it relates to paleontological resources, attend the project kick-off meeting and project progress meetings on a regular basis, and report to the site in the event that potential paleontological resources are encountered.	The Developer	The qualified paleontologist shall be retained prior to issuance of building permit and shall be retained throughout construction activities.	The Developer shall ensure that a qualified paleontologist is retained throughout construction and implements oversight of paleontological resources potentially discovered onsite.
MM GEO-2: Pre-construction Training. The Qualified Paleontologist shall conduct Paleontological Resources Awareness Training for all construction personnel. This may be conducted in conjunction with the archaeological resources training. The training shall include an overview of potential paleontological resources that could be encountered during ground-disturbing activities to facilitate worker recognition, avoidance, and subsequent immediate notification to the Qualified Paleontologist for further evaluation and action, as appropriate; and penalties for unauthorized collecting or intentional disturbance of paleontological resources. A sign-in sheet shall be completed and retained to demonstrate attendance at the awareness training. In the event that construction crews are phased, additional trainings shall be conducted for new construction personnel. The training session shall focus on the recognition of the types of paleontological resources that could be encountered within the project site and the procedures to be followed if they are found. Documentation	The Developer and Contractor	The paleontological Resources Awareness Training shall be conducted prior to the start of construction activities, in conjunction with the Cultural Resources Awareness training.	The Developer and Contractor shall ensure that the Paleontological Resources Awareness Training is given to all construction workers prior to any earth moving activities. The training shall be implemented for any new construction worker on site on their first day on the construction site throughout all construction activities.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
shall be retained demonstrating that all construction personnel attended the training.			
MM GEO-3: Inadvertent Discovery of Paleontological Resources. If a paleontological resource is found, all ground-disturbing activities within 50 feet of the find shall immediately cease. The Qualified Paleontologist shall evaluate the significance of the resources and recommend appropriate treatment measures. At each fossil locality, field data forms shall be used to record pertinent geological data, stratigraphic sections shall be measured, and appropriate sediment samples shall be collected and submitted for analysis. Any fossils encountered and recovered shall be catalogued and donated to a public, nonprofit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County. Accompanying notes, maps, and photographs shall also be filed at the repository. The Qualified Paleontologist shall prepare a report documenting evaluation and/or additional treatment of the resource. The report shall be filed with the County and with the repository. Full-time paleontological resources monitoring shall be conducted for all ground-disturbing activities occurring in older Quaternary alluvium or the Tulare Formation, which is estimated to occur at or below approximately 10 feet in depth. Paleontological resources monitoring shall be performed by a qualified paleontological monitor (or cross-trained archaeological/paleontological monitor) under the direction of the Qualified Paleontologist. Monitors shall have the authority to temporarily halt or divert work away from exposed fossils to recover the fossil specimens. Any significant fossils collected during proposed project-related excavations shall be prepared to the point of identification and curated into an accredited repository with retrievable storage. Monitors shall prepare daily logs detailing the	The Developer and Qualified Paleontologist	During construction	The Developer shall ensure that a qualified paleontologist is retained throughout construction and implements oversight of paleontological resources potentially discovered onsite. If a paleontological resource is found, all ground-disturbing activities within 50 feet of the find shall immediately cease. The Qualified Paleontologist shall evaluate the significance of the resources and recommend appropriate treatment measures.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
types of activities and soils observed and any discoveries. The Qualified Paleontologist shall prepare a final monitoring and mitigation report to document the results of the monitoring effort.			
Section 4.7 Greenhouse Gas Emissions			
Mitigation Measure GHG-1: Greenhouse Gas Reduction Measures. In order to further reduce greenhouse gas emissions, the Applicant shall: • Prior to the start of construction, develop and implement a program encouraging construction workers to carpool or use public transportation for travel to and from construction sites. • Implement a construction waste recycling program with the objective of recycling at least 65% of the project waste (by weight), pursuant to the California Green Building Standards Code. This is discussed further in Section 4.16, Utilities. • Minimize welding and cutting by requiring the use of compression of mechanical applications where practical and within standards.	The Developer	Prior to and during construction	The Developer shall ensure that a program is implemented for carpooling or use of public transport to travel to and from the construction site. The Developer shall perform regular inspections of the project site during construction to ensure that a waste recycling program is implemented and that welding activities are minimized.
Mitigation Measure GHG-2: Circuit Breakers. All breakers used for this project will have a manufacturer-guaranteed sulfur hexafluoride (SF_6) leakage rate of 0.5% per year or less.	The Developer	Prior to construction	The Developer shall ensure that all breakers used for this project meet the requirements of this mitigation measure.
Section 4.8 Hazards and Hazardous Materials			
MM HAZ-1: Broken Photovoltaic Module Detection and Handling Plan. Prior to the issuance of construction permits, the Applicant shall prepare and implement a broken photovoltaic (PV) module detection and handling plan. The plan shall describe the Applicant's method for	The Developer, Contractor, and County	Prior to, during, and post construction	The Developer, or chosen consultant, shall develop the broken PV module detection and handling plan prior to issuance of a building permit for the project. Through regular inspections

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
identifying, handling, and disposing of PV modules that may break, chip, or crack at some point during the proposed project's life cycle. The proposed methods shall be compliant with applicable law and protective of human health and the environment. The plan shall have but not be limited to the following elements: • **Worker Health and Safety Provisions and Handling Protocol.** This protocol shall address isolating workers from hazardous materials during the recovery of broken PV panels and shall include, but not be limited to the following requirements: – Workers shall wear gloves during the handling of broken pieces of PV panels to prevent cuts. – If broken pieces are separated from the PV panel, the pieces shall be collected, and the areal extent of the collected pieces shall be compared to the broken area on the PV panel to ensure that all the pieces have been accounted for. – The broken pieces shall be placed in drums, sealed boxes, puncture-proof bags, or equivalent containers so as to prevent the broken pieces from tearing the containers and being rereleased into the environment. • **Timing of removal.** The PV panels shall be inspected for breakage prior to each PV panel washing event. In the event that broken PV panels are discovered, the broken PV panels and any pieces shall be removed prior to washing any adjacent PV panels. • **Recycling or disposal requirements**. If available, broken panels shall be sent to a PV panel manufacturing facility licensed for the recycling of PV panels; if recycling is unavailable, the broken panels shall be sent to a landfill licensed to receive broken PV			the Developer and Operator shall ensure that the plan is being implemented on the project site

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
panels. The plan shall identify the likely facility to receive broken panels. The plan shall be submitted to the County for review and approval and shall be distributed to all construction crew members and temporary and permanent employees prior to construction and operation of the proposed project. All available data from the panel manufacturer(s) regarding materials used and safety procedures and concerns shall be appended to the plan to assist the County with identifying potential hazards and abatement measures.			
MM HAZ-2: Fire Protection Plan. The Applicant shall prepare a Fire Protection Plan prior to issuance of construction permits. The Fire Protection Plan shall include but not be limited to the following measures: • Internal combustion engines, stationary and mobile, shall be equipped with spark arresters in good working order. • All personnel shall be trained in fire safety practices relevant to their duties. • All construction and maintenance personnel shall be trained and equipped to extinguish small fires. • Work crews shall have fire-extinguishing equipment on hand, as well as emergency numbers and cell phones or other means of contacting the Fire Department. • Security gates shall be approved by the Fire Department and shall include the installation of a key switch or padlock, whichever is most appropriate. • Smoking shall be prohibited while operating equipment and shall be limited to paved or graveled areas or areas cleared of all vegetation. Smoking shall be prohibited within 30 feet of any combustible material storage area (including fuels, gases, and solvents).	The Developer and Contractor	Prior to and during construction	The Developer shall develop the Fire Protection Plan prior to issuance of any building or grading permits. Regular inspections by the Developer shall ensure compliance with the Fire Protection Plan.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
Smoking shall be prohibited in any location during a Red Flag Warning issued by the National Weather Service for the project area.			
Section 4.10 Land Use and Planning			
MM AG-1: Reclamation Plan. See Section 4.2, Agriculture.	See Section 4.2, Agriculture.	See Section 4.2, Agriculture.	See Section 4.2, Agriculture.
Section 4.12 Noise			
MM NOI-1: Stationary Construction Equipment. All stationary equipment shall be placed so that emitted noise is directed away from sensitive receptors nearest to the project site during construction and decommissioning activities.	The Developer and Contractor	During construction	The Developer shall document noise levels from stationary equipment and ensure that stationary equipment is located away from sensitive receptors.
MM NOI-2: Equipment Staging Areas. Equipment staging shall be located in areas as far as feasible from noise-sensitive receptors nearest to the project site during all project construction and decommissioning activities.	The Developer and Contractor	During construction	During construction, regular inspections shall be performed for construction noise prevention measures by a Developer representative and reports shall be kept on file by the Developer for inspection interested parties.
MM NOI-3: Construction and Decommissioning Equipment. All construction and decommissioning equipment shall be equipped with manufacturer-approved mufflers and baffles.	The Developer and Contractor	During construction	The Developer shall document the equipment used on side and ensure that all equipment is equipped with manufacturer-approved mufflers and baffles.
MM NOI-4: Construction and Decommissioning Hours. During all project construction and decommissioning, all noise-producing construction-related activities shall be limited to the hours of 6:00 AM to 9:00 PM, Monday through Friday, and to the hours of 7:00 AM to 5:00 PM on Saturdays and Sundays.	The Developer and Contractor	During construction	The Developer shall document timing of construction activities and verify that construction timing restrictions are being met throughout construction activities.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
Section 4.14 Transportation and Traffic			
MM TRA-1: Construction and Decommissioning Traffic Control and Management Plan. Prior to issuance of construction permits, building permits, or encroachment permits, the Applicant Developer and/or its construction contractors shall prepare and submit a traffic control and management plan to Fresno County Department Public Works and Planning and the California Department of Transportation (Caltrans) District 6 office for approval. The traffic control and management plan shall be prepared in accordance with both the California's Manual on Uniform Traffic Control Divisions and Work Area Traffic Control Handbook and must include but not be limited to the following items: • Specify timing of deliveries of heavy equipment and building materials. • Direct construction traffic with a flagger. • Place temporary signage, lighting, and traffic control devices, if required, including but not limited to appropriate signage along access routes to indicate the presence of heavy vehicles and construction traffic. • Ensure access for emergency vehicles to the project site. • Maintain access to adjacent property. • Specify both construction-related vehicle travel and oversize-load haul routes, minimize construction traffic during the AM and PM peak hours, and avoid residential neighborhoods to the maximum extent feasible. • Obtain all necessary permits from the appropriate agencies for work within the road right-of-way or use of	The Developer and Contractor	Prior to and during construction	The Developer shall prepare the Traffic Control and Management Plan prior to issuance of any building or grading permits. The Developer shall monitor and coordinate with the contractor during construction meetings to ensure that the Traffic Control and Management Plan is implemented successfully as documented in inspection logs, and the construction traffic management plan shall remain on file at the Developer's offices and provided to the County for their files.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
oversized/overweight vehicles, which may require California Highway Patrol or a pilot car escort. • Submit plans for any work on the proposed intersection improvements on Lassen Avenue at the site access driveways to the County and Caltrans District 6 for review and approval prior to the issuance of any encroachment or road improvement permit for the work. • Clean or remove any material that is deposited onto the roadways as soon as possible and at least prior to the end of each working day. • Obtain any access easements from private property owners necessary to perform required repair work.			
MM-TRA-2: Preconstruction and Pre-Decommissioning Road Survey Report. A preconstruction report and a pre-decommissioning report shall be prepared by a qualified registered engineer to include a detailed analysis of road suitability to accommodate haul trucks during project construction. The report shall be submitted to the Fresno County Department of Public Works and Planning. Prior to initiating the preconstruction or decommissioning report, the proposed methodology shall be presented to the Fresno County Department of Public Works and Planning for review and approval. Improvements to existing roads may be necessary based on the findings of the report.	The Developer and County	Prior to construction and decommissioning	The Developer shall retain a qualified engineer to conduct the Road Survey reports. Documentation of the reports shall be provided to the County and made available to any other interested parties, upon request. If County review of these reports indicates that improvements are required for the roads, these improvements shall be implemented by the Developer.
MM TRA-3: Road Repair Agreement. Prior to the start of construction, the Applicant shall enter into a secured agreement with the County to ensure that the proposed project contributes its fair-share portion towards repairs of any County roads that are impacted by this project. The scope of impacts shall be determined in consultation with the County of Fresno and Caltrans District 6.	The Developer and County	Prior to construction	Payment of fees shall occur prior to the start of construction activities. The Developer shall obtain written documentation from the County on all fees payed.

Mitigation Measure	Responsible Party	Monitoring Timing	Monitoring and Reporting Program
Section 4.15 Tribal Cultural Resources			
MM CUL-1: Retain a Qualified Archaeologist. See Section 4.5, Cultural Resources.	See Section 4.5, Cultural Resources.	See Section 4.5, Cultural Resources.	See Section 4.5, Cultural Resources.
MM CUL-2: Inadvertent Discovery of Archaeological Resources or Tribal Cultural Resources. See Section 4.5, Cultural Resources.	See Section 4.5, Cultural Resources.	See Section 4.5, Cultural Resources.	See Section 4.5, Cultural Resources.
Section 4.17 Wildfire			
MM HAZ-2: Fire Protection Plan. See Section 4.8, Hazards and Hazardous Materials.	See Section 4.8, Hazards and Hazardous Materials.	See Section 4.8, Hazards and Hazardous Materials.	See Section 4.8, Hazards and Hazardous Materials.

Abbreviations

APLIC	Avian Power Line Interaction Committee
Applicant	RWE Solar Development, LLC (formerly known as EC&R Solar Development, LLC)
BMPs	Best Management Practices
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
County	Fresno County

EIR	Environmental Impact Report
hp	horsepower
MLD	Most Likely Descendant
MMRP	Mitigation, Monitoring, and Reporting Program
NAHC	Native American Heritage Commission
NFWFL	National Fish and Wildlife Forensics Laboratory
PRC	Public Resources Code
proposed project	Fifth Standard Solar Complex Project
PV	photovoltaic
SF_6	sulfur hexafluoride
SJVAPCD	San Joaquin Valley Air Pollution Control District
SWHA	Swainson's Hawk
SWPPP	Stormwater Pollution Prevention Plan
USDOI	United States Department of the Interior
USFWS	United States Fish and Wildlife Service
UV	ultraviolet
VERA	Voluntary Emission Reduction Agreement

Conditions of Approval - CUP No. 3562, 3563, and 3564 - Compliance Matrix

1.	The life of this each land use permit (CUP Nos. 3562,3563, and 3564) shall expire upon expiration of the initial life of the solar lease or the 35-year initial life of each of the projects. If the solar leases are to be extended or the initial life of each project extends beyond this approval, approval of new land use permits shall be obtained.
2.	The CUP approval shall be conditioned upon acceptance of Financial Assurances by the Director of the Department of Public Works and Planning and/or the Director's designee.
3.	A Site Plan Review (SPR) Application shall be submitted for approval by the Director of the Department of Public Works and Planning in accordance with Section 874 of the Fresno County Zoning Ordinance prior to the issuance of Building Permits for each approved land use permit (CUP Nos. 3562, 3563, and 3564. Items to be addressed under the SPR process may include, but are not limited to, design of parking and circulation, driveway, access, grading and drainage, fire protection and lighting.
4.	The project shall adhere to the procedures listed in the Reclamation Plans prepared for the operation, including requirements for financial estimates, bonding and facility removal when operation ceases. Prior to the issuance of any Construction Permits (Building, Electrical, Mechanical, Plumbing), the required bond amount, based on the engineer's estimate, shall be deposited (or evidence of a Bank Guarantee or Irrevocable Letter of Credit shall be provided).
5.	The Reclamation Plans shall be revised to provide for an annual increase in costs at 3%, or tied to the Consumer Price Index (CPI), or other mechanism acceptable to the Fresno County Department of Public Works and Planning.
6.	The project shall comply with the Pest and Weed Management Plan, April 2018, in order to control weeds and rodents on the property that may impact adjacent properties.
7.	The County of Fresno shall enter into an agreement with a Consultant to act as a Third Party Monitor and implement the Mitigation Monitoring and/or Reporting Program and Conditions Compliance Matrix in accordance with Section 21081.6 of the California Public Resources Code and Section 15097 of Title 14, Chapter 3 of the California Code of Regulations. This agreement shall cover monitoring the Project's Mitigation Measures and Conditions of Approval as provided in the Mitigation Monitoring and/or Reporting Program and Conditions Compliance Matrix, and the Applicant shall pay all costs associated with the Consultant costs and Mitigation Monitoring.
8.	The Applicant shall enter into an agreement with the County of Fresno to compensate for County staff's time to review and administer any materials related to Mitigation Monitoring and/or Reporting, including those prepared by the Third Party Monitor.
9.	These Conditional Use Permits will become void, unless there has been substantial development within two years of the effective date of this approval.

10.	Prior to approval of any construction permits, the applicant shall offer of dedication for any additional right-of-away along the project's Lassen frontage needed to net 55 feet to the center line.
11.	The Applicant/Developer shall make all reasonable efforts to establish a point of sale in Fresno County for equipment and construction-related items necessary for the project and to hire employees from the local workforce; and commit to purchasing products and equipment from local (Fresno County) manufacturing facilities and venders

Project Notes (Mandatory Requirements)

1.	Prior to initiating construction, the Applicant shall be required to contact Underground Service Alert (811) to allow Westlands Water District staff to locate and mark its facilities prior to commencement of grading or construction activities.
2.	. Off-street parking requirements shall be one parking space for every two (2) employee's onsite. One of which, shall be an ADA van accessible parking stall located as close as possible to the main entrance of main building. All parking spaces for the physically disabled shall be placed adjacent to facility access ramps or in strategic areas where the disabled shall not have to travel behind parking spaces other than to pass behind the parking space in which they parked.
3.	The driveway should be a minimum of 24 feet and a maximum of 35 feet in width as approved by the Road Maintenance and Operation Division. If only the driveway is to be paved, the first 100 feet of the edge of the ultimate right-of-way shall be concrete or asphalt. An encroachment permit shall be required from Road Maintenance, and Operations for any work on the County right-of-way prior to commencement of construction. Any proposed gate that provides initial access to this site shall be setback from the edge of the road right-of-way a minimum of 20 feet or the length of the longest vehicle to enter the site, whichever is greater. Internal access roads shall comply with required widths by the Fire District for emergency apparatus. A dust palliative should be required on all parking and circulation areas.
4.	Any proposed landscape improvement area of 500 square feet or more shall comply with California Code of Regulations Title 23, Division 2 Chapter 2.7 Model Water Efficient Landscape Ordinance (MWELO) and require submittal of Landscape and Irrigation plans per Governors Drought Executive Order of 2015. The Landscape and

	irrigation plans shall be submitted to the Department of Public Works and Planning, Site Plan Review (SPR) unit for review and approval prior to the issuance of Building Permits.
5.	No building height or structure erected in this Zone District shall exceed thirty-five (35) feet in height, per Section 816.5.D of the Zoning Ordinance. An Encroachment Permit will be required for any improvements within the County right-of-way prior to commencement of construction. Outdoor lighting should be hooded and directed away from adjoining streets and properties. All proposed signs require submittal to the Department of Public Works and Planning permits counter to verify compliance with the Zoning Ordinance. Off-site advertising for commercial uses are prohibited in the AE (Exclusive Agriculture) Zone District.
6.	Any additional runoff generated by the proposed development of this site cannot be drained across property lines and must be retained or disposed of, per County Standards. An Engineered Grading and Drainage Plan and a grading permit are required. Contact Development Engineering at (559) 600-4022 to talk to a grading engineer.
7.	Each access point shall comply with the provision of NPDES.
8.	Access from Lassen Ave should be confirmed with Caltrans and not assumed as allowed. A Caltrans encroachment permit will be required for each access point along a state highway.
9.	Typically, any existing or proposed entrance gate should be set back a minimum of 20’ from the road right-of-way line or the length of the longest truck entering the site and shall not swing outward.
10.	For any unpaved or gravel surface access roads, the first 100’ off the edge of the road right-of-way must be graded and asphalt concrete paved.

EXHIBIT 2

Environmental Impact Report
7257 Fifth Standard Solar Project – Findings and Statement of Overriding Considerations

Findings and Statement of Overriding Consideration

Prepared for:

Fresno County Department of Public Works and Planning
Development Services and Capital Projects Division
2220 Tulare St. Suite A,
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Prepared by:

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Fresno, CA 93711

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Table of Contents

LIST OF TABLES

Abbreviations

APLIC	Avian Power Line Interaction Committee
Applicant	RWE Solar Development, LLC (formerly known as EC&R Solar Development, LLC)
BMP	best management practice
Board	Fresno County Board of Supervisors
CAISO	California Independent System Operator
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
County	Fresno County
CPUC	California Public Utilities Commission
CUP	Conditional Use Permit
DPM	diesel particulate matter
EIR	Environmental Impact Report
Findings	Findings of Fact
gen-tie	generation-tie
GHG	greenhouse gas
HCP	Habitat Conservation Plan
I-5	Interstate 5
kV	kilovolt
MLD	Most Likely Descendant
MM	Mitigation Measure
MMBTU/year	million British Thermal Units per year
MW	megawatt
NAHC	Native American Heritage Commission
NCCP	Natural Communities Conservation Plan
NOA	Notice of Availability
NOP	Notice of Preparation

NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
PG&E	Pacific Gas and Electric
PM_{10}	particulate matter less than 10 microns in diameter
PRC	Public Resources Code
project	Fifth Standard Solar Project Complex
PV	photovoltaic
RPS	Renewable Portfolio Standards
RWQCB	Regional Water Quality Control Board
SF_6	sulfur hexafluoride
SJVAPCD	San Joaquin Valley Air Pollution Control District
SR	State Route
Statement	Statement of Overriding Considerations
SWPPP	Stormwater Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service
UV	ultraviolet
VERA	Voluntary Emissions Reduction Agreement

1.0 INTRODUCTION

This document provides a brief summary of the Fifth Standard Solar Project Complex (project) and the environmental review process. This document contains the Findings of Fact (Findings) of the County of Fresno's Planning Commission (Commission) for each significant environmental effect identified within the Final Environmental Impact Report (EIR). This document also provides a Statement of Overriding Considerations (Statement) as required by California Environmental Quality Act (CEQA) Guidelines 15093, providing rationale in support of the Commission's determination that the benefits of the project outweigh its unavoidable significant environmental effects.

1.1 PROJECT DESCRIPTION

The term "project," as used in this document, means the project description as set forth in Section 2.0 of the Draft EIR.

Project Location

The project site is in unincorporated Fresno County (County), approximately 2 miles east of Interstate 5 (I-5) and approximately 13 miles east of Coalinga. Lassen Avenue (California State Route [SR] 269) borders the eastern side of the property and is the only paved road adjacent to the project site. Trinity Avenue, Tractor Avenue, and Phelps Avenue intersect the project site, but are not improved roads. Nearby communities include Huron (1.5 miles north), Avenal (9 miles south), Kettleman City (12 miles southeast), and Coalinga (13 miles west).

Project Overview

The RWE Solar Development, LLC (formerly known as EC&R Solar Development, LLC) (Applicant) has applied to the Fresno County Department of Public Works and Planning for three Unclassified Conditional Use Permits (CUPs) (CUP Application Nos. 3562, 3563, and 3564) to construct, operate, maintain, and decommission a 150-megawatt (MW) solar photovoltaic (PV) generation facility, an up to 20-MW solar PV generation facility, and an up to 100-MW energy storage facility. The project includes PV electricity-generating facilities, a battery storage facility, and associated infrastructure. The proposed project is located on several contiguous parcels (project site), totaling approximately 1,600 acres in unincorporated Fresno County. A new generation-tie (gen-tie) line would be constructed to connect the solar and storage components of the proposed project to Pacific Gas and Electric's (PG&E's) adjacent Gates Substation (point of interconnect). The anticipated lifetime of the proposed project would be 35 years, and the facility would be decommissioned once operations cease. The final lease agreement is anticipated to occur by 2022, with a lease term of 35 years. The CUP would tentatively have an end date of August 2057. The lease agreement would include an option for renewal, in which case a new land use permit, subject to the County's review and approval, would need to be obtained.

The proposed project includes three separate components, which are summarized below:

- Unclassified CUP Application No. 3562 Fifth Standard Solar Facility: a 150-MW PV solar energy generation facility that is anticipated to require up to 1,400 acres of the site. A 230-kilovolt (kV) project gen-tie line would be constructed from the southwest portion of this site to the point of interconnect. The gen-tie line would consist of a 0.3-mile aboveground power line.
- Unclassified CUP Application No. 3563 Stonecrop Solar Facility: a 20-MW PV solar energy generation facility that would be located adjacent to the Fifth Standard Solar Facility and would require less than 200 acres of the site.
- Unclassified CUP Application No. 3564 Blackbriar Battery Storage Facility: an up to 100-MW battery storage facility that would be located adjacent to the Fifth Standard Solar Facility and the Stonecrop Solar Facility and would require less than 5 acres of the site.

Project Objectives

The proposed objectives for the project are as follows:

- Construct and operate a solar PV power-generating facility capable of producing up to 170 MW alternating current in a cost competitive manner.
- Interconnect directly to the California Independent System Operator (CAISO) high-voltage electrical transmission system (grid) to the Gates Substation.
- Assist California utilities in meeting their obligations under California's Renewable Portfolio Standard Program, including 60 percent of retail sales from renewable sources by the end of 2030.
- Assist California utilities in meeting their obligations under the California Public Utilities Commission's (CPUC's) Energy Storage Framework and Design Program, including procurement targets of 1,325 MW by 2020, by providing up to 100 MW of storage capacity.
- Provide renewable-energy-related and diversified job opportunities and training that will help reduce local unemployment and benefit the local economy.

Based on its own review of the EIR and other information and testimony received in connection with the project, the County finds these objectives to be acceptable and persuasive from a public policy standpoint and accords them weight in considering the feasibility of alternatives set forth in the EIR and in invoking overriding considerations in approving the project. (See *Sierra Club v. County of Napa*, 121 Cal.App.4th 1490, 1507-1508 [2004]; and *Sequoyah Hills Homeowners Association v. City of Oakland*, 23 Cal.App.4th 704, 715 [1993] ["Sequoyah Hills"]).

Project Approvals

Project approval requires the County as lead agency, as well as certain "responsible agencies," to take discrete planning and regulatory actions to approve the overall project. In addition to certifying the Final EIR and adopting these Findings and the associated Statement of Overriding Considerations and Mitigation Monitoring and Reporting Program (CEQA requirements), permits and approvals would be required including, but not limited to:

- Unclassified CUPs (CUPs Application Nos. 3562, 3563, and 3564) to construct, operate, maintain, and decommission the proposed project
- Fresno County Building Permits and Right-of-Way Encroachment Permit
- Model Water Efficiency Landscaping Ordinance
- Central Valley Regional Water Quality Control Board (RWQCB) National Pollutant Discharge Elimination System (NPDES) Permit and Report of Waste Discharge
- San Joaquin Valley Air Pollution Control District (SJVAPCD) Regulation VIII, Dust Control Plan
- SJVAPCD Rule 9510, Indirect Source Review
- Fresno County Grading Permit
- California Department of Transportation (Caltrans) Encroachment Permit.

Responsible and Trustee Agencies

Responsible and trustee agencies are state and local public agencies, other than the lead agency, that have some authority to carry out or approve a project or that are required to approve a portion of the project for which a lead agency is preparing or has prepared an EIR. A list of responsible and permitting agencies is included below. However, this list is not exhaustive and could include other agencies. The Draft EIR has been designed to provide information to these agencies to assist them in the permitting processes for the proposed project. While CEQA is not binding on federal agencies, and no federal agencies have been identified that would be required to take action on the project, and any such agency may use the analysis in this document to assist with the preparation of their own analyses required by federal law.

The following agencies may serve as responsible and trustee agencies:

- California Department of Fish and Wildlife (CDFW)
- Central Valley Regional Water Quality Control Board
- San Joaquin Valley Air Pollution Control District
- California Public Utilities Commission

- Pacific Gas and Electric (PG&E)

1.2 ENVIRONMENTAL REVIEW PROCESS

To initiate preparation of the Draft EIR, the County of Fresno submitted a Notice of Preparation (NOP) to the County of Fresno Clerk and the State Clearinghouse on September 13, 2017 (State Clearinghouse Number 2017091038). The NOP was circulated by certified mail to responsible and trustee agencies, as well as those parties who previously requested notice of the proposed project. Additionally, the NOP was mailed to all residents and landowners located within one mile of the proposed project site. A 30-day scoping period ran from September 15, 2017, through October 16, 2017. A public scoping meeting was held at the Keenan Community Center in the City of Huron on September 27, 2017. In accordance with Section 15082 of the CEQA Guidelines, the County prepared a NOP, and all comments received on the NOP are presented in Appendix A of the Draft EIR.

As part of the NOP scoping process, it was determined that implementation of the proposed project would result in no impact to the following environmental topic areas:

- Population and Housing
- Recreation

With the exception of a cursory impact discussion in Section 6.0 of the Draft EIR, Effects Found Not To Be Significant, these environmental resources areas were not discussed further in the Draft EIR.

In addition, certain subjects within various topical areas were determined not to be significant. Other potentially significant issues are analyzed within these topical areas; however, the following issues were not analyzed (the sections provided in parentheses are sections of the Draft EIR):

- Forest land zoning and conversion (Section 4.2, Agriculture)
- Odors (Section 4.3, Air Quality)
- Rupture of a known earthquake fault (Section 4.6, Geology and Soils)
- Soils incapable of supporting alternative wastewater systems (Section 4.6, Geology and Soils)
- Emission of hazardous materials within 0.25 mile of an existing or proposed school (Section 4.8, Hazards and Hazardous Materials)
- Airports and private airstrips (Section 4.8, Hazards and Hazardous Materials)
- Inundation by seiche, tsunami, or mudflow (Section 4.9, Hydrology and Water Quality)
- Division of an established community (Section 4.10, Land Use and Planning)

- Aviation noise (Section 4.12, Noise)
- New or physically altered governmental facilities, including, schools, parks, and other public facilities (Section 4.13, Public Services)
- Wastewater treatment capacity (Section 4.16, Utilities and Service Systems)

An explanation of why each of the issues above was determined not to be significant was provided in Section 6.0 of the Draft EIR, Effects Found Not To Be Significant.

The Draft EIR includes an analysis of the following issue areas:

- Aesthetics
- Agriculture
- Air quality
- Biological resources
- Cultural resources
- Geology and soils
- Greenhouse gases
- Hazards and hazardous materials
- Hydrology and water quality
- Land use and planning
- Minerals
- Noise
- Public services
- Transportation
- Tribal cultural resources
- Utilities and service systems
- Energy
- Wildfire

The Draft EIR was circulated for public review on February 7, 2020 for a 45-day comment period from February 7, 2020 through March 23, 2020. To initiate this public comment period, the County of Fresno circulated a Notice of Availability (NOA) to responsible and trustee agencies as defined under CEQA and parties previously requesting information on the proposed project. The NOA was provided to the State Clearinghouse and the County of Fresno Clerk on February 7, 2020. The Notice was also published in The Business Journal on February 7, 2020.

2.0 CALIFORNIA ENVIRONMENTAL QUALITY ACT REQUIREMENTS

CEQA, Public Resources Code (PRC) Section 21000 et seq., requires a lead agency to make written findings of project effects when a lead agency decides to approve a project for which an EIR has been certified (PRC Section 21081). Section 15091 of the CEQA Guidelines (California Code of Regulations [CCR] Title 14) states, in part:

(a) No public agency shall approve or carry out a project for which an EIR has been certified which identifies one or more significant environmental effect of the project unless the public agency makes one or more written finding for each of those significant effects, accompanied by a brief explanation of the rationale for each finding. The possible findings are:

(1) Changes or alterations have been required in, or incorporated into, the project, which avoid or substantially lessen the significant environmental effect as identified in the final EIR.

(2) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

(3) Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR.

The findings required by subsection (a) shall be supported by substantial evidence in the record.

The documents and other materials that constitute the administrative record upon which the Commission based its decision and findings are held by the County of Fresno at the following location:

County of Fresno Public Works and Planning Department
Fresno, California
2220 Tulare Street, Street level
Fresno, California 93721

2.1 RECORD OF PROCEEDINGS

In accordance with PRC Section 21167.6, subdivision (e), the record of proceedings for the County's decision on the project includes the following documents:

- The NOP and all other public notices issued by the County in conjunction with the project; the NOP was published on September 13, 2017 and the comment period closed on October 16, 2017;
- All comments submitted by agencies or members of the public during the comment period on the NOP;
- The Draft EIR for the project and all appendices; the Draft EIR was published on February 2, 2020 and circulated for the statutory 45-day review period; the comment period for the Draft EIR closed on March 23, 2020;
- All comments submitted by agencies or members of the public during the comment period on the Draft EIR;
- The Final EIR for the project, including comments received on the Draft EIR, responses to those comments, and appendices;
- Documents cited or referenced in the Draft and Final EIRs;
- The Mitigation Monitoring and Reporting Program for the project;
- All findings and resolutions adopted by the Planning Commission in connection with the project and all documents cited or referred to therein;
- All findings and resolutions adopted by the Commission in connection with the project and all documents cited or referred to therein;
- All reports, studies, memoranda, maps, staff reports, or other planning documents relating to the project prepared by the County, consultants to the County, or responsible or trustee agencies with respect to the County's compliance with the requirements of CEQA and with respect to the County's action on the project;
- All documents submitted to the County by other public agencies or members of the public in connection with the Project, up through the close of the Planning Commission public hearing;
- Any minutes and/or verbatim transcripts of all information sessions, public meetings, and public hearings held by the County in connection with the project;
- Any documentary or other evidence submitted to the County at such information sessions, public meetings, and public hearings;

- The County of Fresno General Plan and all environmental documents prepared in connection with the adoption of the General Plan;
- The County of Fresno Ordinance and all other County Code provisions cited in materials prepared by or submitted to the County;
- Any and all resolutions adopted by the County regarding the project and all staff reports, analyses, and summaries related to the adoption of those resolutions;
- Matters of common knowledge to the County, including but not limited to federal, state, and local laws and regulations;
- Any documents expressly cited in these findings, in addition to those cited above; and
- Any other materials required for the record of proceedings by PRC Section 21167.6, subdivision (e).

The official custodian of the record is David Randall, Senior Planner, Fresno County Department of Public Works and Planning, 2220 Tulare Street, Suite A, Fresno, California 93721.

Without exception, any documents set forth above that are not found in the project files fall into one of two categories. Many of them reflect prior planning or legislative decisions known to the Commission in approving the project (see *City of Santa Cruz v. Local Agency Formation Commission* [1978] 76 Cal.App.3d 381, 391-391; *Dominey v. Department of Personnel Administration* [1988] 205 Cal.App.3d 729, 738, fn. 6.). Other documents influenced the expert advice provided to County staff or consultants, who then provided advice to the Commission as final decision-makers. For that reason, such documents form part of the underlying factual basis for the Commission's decisions relating to approval of the Project. (see PRC Section 21167.6, subd. (e)(10); *Browning-Ferris Industries v. City Council of City of San Jose* [1986] 181 Cal.App.3d 852, 866; *Stanislaus Audubon Society, Inc. v. County of Stanislaus* [1995] 33 Cal.App.4th 144, 153, 155.)

2.2 FINDINGS REQUIRED UNDER CEQA

PRC Section 21002 provides that, "public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects[.]" The same statute provides that the procedures required by CEQA, "are intended to assist public agencies in systematically identifying both the significant effects of Projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects." Section 21002 goes on to provide that, "in the event [that] specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects thereof."

The mandate and principles announced in PRC section 21002 are implemented, in part, through the requirement that agencies must adopt findings before approving projects for which EIRs are

required. For each significant environmental effect identified in an EIR for a project, the approving agency must issue a written finding reaching one or more of three permissible conclusions, as described in Section 2.0, above.

The term "feasible" means capable of being accomplished in a successful manner within a reasonable period, considering economic, environmental, social, legal, and technological factors. The concept of "feasibility" also encompasses the question of whether a particular alternative or mitigation measure promotes the underlying goals and objectives of a project. Moreover, feasibility under CEQA encompasses “desirability” to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, legal, and technological factors. (*City of Del Mar v. City of San Diego* (1982) 133 Cal.App.3d 410, 417 (*City of Del Mar*); see also CNPS, *supra*, 177 Cal.App.4th at p. 1001. Additionally, an alternative that is impractical or undesirable from a policy standpoint may be rejected as infeasible ([Kostka, supra, § 17.29, p. 824]; *San Diego Citizenry Group v. County of San Diego* (2013) 219 Cal.App.4th 1, 17.).

For purposes of these findings (including the Mitigation Monitoring and Reporting Program), the term "avoid" refers to the effectiveness of one or more mitigation measures to reduce an otherwise significant effect to a less than significant level. In contrast, the term "substantially lessen" refers to the effectiveness of such measure or measures to substantially reduce the severity of a significant effect, but not to reduce that effect to a less than significant level.

CEQA requires that the lead agency adopt feasible mitigation measures or, in some instances, feasible alternatives to substantially lessen or avoid significant environmental impacts that would otherwise occur. However, project modification or alternatives are not required where such changes are infeasible or where the responsibility for modifying the project lies with some other agency. (CEQA Guidelines Section 15091, subd. (a), (b).)

With respect to a project for which significant impacts are not avoided or substantially lessened, a public agency, after adopting proper findings, may nevertheless approve the project if the agency first adopts a Statement of Overriding Considerations that sets forth the specific reasons that the agency found that the project's benefits outweigh its unavoidable adverse environmental effects. (CEQA Guidelines, Section 15093, 15043, subd. (b); see also PRC Section 21081, subd. (b).) The California Supreme Court has stated, “[t]he wisdom of approving . . . any development project, a delicate task which requires a balancing of interests, is necessarily left to the sound discretion of the local officials and their constituents who are responsible for such decisions. The law as we interpret and apply it simply requires that those decisions be informed, and therefore balanced.” (Goleta II, supra, 52 Cal.3d at p. 576).

CEQA does not require a lead agency to make individual findings for impacts that are determined to be less than significant without mitigation (CEQA Guidelines § 15091 (a)). Impacts associated with the project deemed to be less than significant prior to mitigation or no impact are discussed in detail in the EIR and summarized below:

- Aesthetics – Have a substantial adverse effect on a scenic vista. (Less Than Significant Impact)

- Aesthetics – Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. (Less Than Significant Impact)

- Aesthetics – Substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Less Than Significant Impact)

- Biological Resources – Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (No Impact)

- Biological Resources – Have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. (No Impact)

- Biological Resources – Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (No Impact)

- Biological Resources – Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans. (No Impact)

- Geology and Soils – Expose people or structures to potentially substantial adverse effects, including the risk of loss, injury or death involving Strong seismic ground shaking, seismic-related ground failure including liquefaction, or landslides. (Less Than Significant Impact)

- Geology and Soils – Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. (Less Than Significant Impact)

- Geology and Soils – Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property. (Less Than Significant Impact)

- Hazards and Hazardous Materials – Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (Less Than Significant Impact)

- Hazards and Hazardous Materials – Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, it would not create a significant hazard to the public or the environment. (Less Than Significant Impact)

- Hazards and Hazardous Materials – Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less Than Significant Impact)
- Hydrology and Water Quality – Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. (Less Than Significant Impact)
- Hydrology and Water Quality – Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. (Less Than Significant Impact)
- Hydrology and Water Quality – Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river through the addition of impervious surfaces, in a manner which would: result in substantial erosion or siltation on- or offsite, substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite, create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff or impede or redirect flood flows. (Less Than Significant Impact)
- Hydrology and Water Quality – Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. (Less Than Significant Impact)
- Mineral Resources – Result in the loss of availability of a known mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the state. (No Impact)
- Mineral Resources – Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. (No Impact)
- Noise and Vibration – Result in the generation of excessive groundborne vibration or groundborne noise levels. (Less Than Significant Impact)
- Public Services – Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives. (Less Than Significant Impact)
- Transportation – Conflict with or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b). (Less Than Significant Impact)
- Utilities and Service Systems – Result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural

gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. (Less Than Significant Impact)

- Utilities and Service Systems – Sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years. (Less Than Significant Impact)
- Utilities and Service Systems – Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. (Less Than Significant Impact)
- Utilities and Service Systems – Comply with federal, state, and local management and reduction statutes and regulations related to solid waste. (Less Than Significant Impact)
- Wildfire – Substantially impair an adopted emergency response plan or emergency evacuation plan. (Less Than Significant Impact)
- Wildfire – Exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors. (No Impact)
- Wildfire – Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. (No Impact)
- Energy – Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. (Less Than Significant Impact)
- Energy – Conflict with or obstruct a state or local plan for renewable energy or energy efficiency. (No Impact)

The County has reviewed the Final EIR, which contains responses to comments on the Draft EIR, any text changes to the Draft EIR, and additional information. The County also has considered the entire record for this project. The following Findings of Fact regarding the significant effects of the project pursuant to Public Resources Code Section 21081 and CEQA Guidelines Section 15091 are based on this review.

Aesthetics

Impact AES-4 The proposed project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Nighttime construction work and additional glare from the solar panels during the daytime could result in significant lighting or glare impacts in the project area if lights or glare were to shine onto adjacent properties and/or a public right-of-way. These potential impacts could be mitigated to a less than significant level through MM AES-1 (Lighting), requiring that all outdoor lighting be hooded, directed downward, and permanently maintained. The proposed project would introduce a new potential source of glare from the reflective portions of the solar panel arrays. However, the PV panels would be covered with dark, high-light-absorbing, low-reflective glass, and mounted on a metal tracking system. Further, in accordance with County policy and the County's Solar Guidelines, the solar panels would be set back a minimum of 50 feet from the property line and neighboring agricultural operations. This would reduce potential lighting and glare from reaching nearby sensitive receptors including adjacent properties and viewers from the public right-of-way. Impacts related to lighting and glare would be less than significant with mitigation incorporated. (Draft EIR pages 4.1-20 and 4.1-21).

MM AES-1: Lighting. *All outdoor lighting shall be hooded, directed downward, and permanently maintained to not shine towards adjacent properties and roads.*

Agriculture

Impact AG-1 The proposed project would convert Prime, Unique, or Farmland of Statewide Importance to a non-agricultural use.

Finding: Changes or alterations have been required in, or incorporated into, the project, however, impacts would remain significant and unavoidable after implementation of all feasible mitigation (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM AG-1, is required or is incorporated into the project and would reduce impacts related to conversion of farmland, but not to a less than significant level. The County finds that the environmental effect has been mitigated to the maximum extent feasible, and that no feasible mitigation or alternative exists that would avoid the significant effect and therefore, the impact is significant and unavoidable. In Section 4.2 of the Draft EIR, the California Land Evaluation and Site Assessment Model was run for the permanent conversion of farmland as a result of implementation of the project. The final score from this model was 87.72, which means that conversion of agricultural land is considered significant. A total of 1,600 acres of Prime Farmland would be converted to non-agricultural use for up to 35 years as a result of the project. MM AG-1 (Reclamation Plan) includes measures to return the land back to agricultural use after the 35 years of solar production; however, impacts related to conversion of farmland would remain significant and unavoidable.

MM AG-1: Reclamation Plan. *Prior to any ground-disturbing activity, the Applicant shall enter into a Reclamation Agreement to implement a Reclamation Plan for each Conditional Use Permit for restoration of agricultural land. The Plan shall include the following standards:*

- *Final reclamation actions shall require that agricultural land be returned to a fertility level equivalent to that level required to support crops recommended by an agricultural consultant through consultation with the County.*

- *Revegetation fertility level success shall be achieved when the productive capability of the revegetated area is equivalent to or exceeds, for two equivalent crop years, that of the pre-project condition or any similar crop production in the region, as determined by an agricultural consultant or as compared to the baseline onsite agricultural production, as determined by the County.*

Impact AG-2 The proposed project would conflict with existing zoning for agricultural use or a Williamson Act contract.

Finding: No feasible changes or alterations have been identified for the project. Impacts would remain significant and unavoidable (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: The majority of the project site, with the exception of a 1.25-acre parcel located within the site, is currently under a Williamson Act contract. The project would result in a permanent conversion of all of the Williamson Act contracted lands of the project site and would require a Williamson Act Contract Cancellation Petition. (Draft EIR pages 4.2-12 and 4.2-13).

On July 8, 2020, the County of Fresno Agricultural Land Conservation Committee (ALCC) met to review the application for cancellation. At the hearing, Fresno County Staff provided a recommendation to deny the petition for cancellation of Agricultural Land Conservation Contract Nos. 1809, 2227, 2799, 5150, and partial cancellation of Agricultural Land Conservation Contract Nos. 365 and 367 because they determined the required findings under Government Code Section 51282(c) could not be made. Government Code Section 51282(c) provides that cancellation of Agricultural Land Conservation Contracts can be made if the local government makes one of the following findings: (1) cancellation is consistent with purposes of the Williamson Act or (2) cancellation is in the public interest. Based on the information presented at the hearing, the ALCC voted unanimously to recommend approval of the cancellation application to the Board of Supervisors.

The County finds that there are no feasible mitigation measures to reduce this impact to a less than significant level, and therefore, the impact related to a conflict with Williamson Act contracts remains a significant and unavoidable impact.

Impact AG-3 The proposed project would involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

Finding: No feasible changes or alterations have been identified for the project. Impacts would remain significant and unavoidable (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Given the increased importance of renewable energy in California, other landowners may determine that the conversion of some of their land holdings to non-agricultural use is economically feasible; thus, indirect conversion of offsite farmland could potentially occur. (Draft EIR pages 4.2-13 and 4.2-14). The County finds that there are no feasible mitigation measures to reduce this impact to a less than significant level, and therefore, the impact related to other changes in the environment that could result in conversion of agricultural land to non-agricultural use is significant and unavoidable.

Air Quality

Impact AQ-1 The proposed project would not conflict with or obstruct implementation of the applicable air quality plan.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Section 4.3 of the Draft EIR found that construction and decommissioning of the project would result in exceedances of the SJVAPCD thresholds for NO_x and PM_{10}, and therefore mitigation is required. The project would comply with the SJVAPCD Rule 9510, Indirect Source Review, which requires large development projects to reduce exhaust emissions from construction equipment by 20 percent for NO_x. However, construction activities associated with the project would still exceed SJVAPCD threshold of significance for NO_x and PM_{10}.

Implementation of MM AQ-1 (Air Quality Best Management Practices [BMPs]) and MM AQ-1 (Voluntary Emission Reduction Agreement [VERA]) would reduce emissions below the SJVAPCD's applicable thresholds of significance. MM AIR-2 would require that the Applicant participate in a VERA with the SJVAPCD or stagger the construction periods for the three facilities to avoid a significant impact. If construction periods are not staggered, the VERA would offset the NO_x emissions from construction activities so that the project would not exceed SJVAPCD thresholds. Therefore, impacts related to obstruction of the applicable air quality plans would be less than significant with mitigation incorporated. (Draft EIR pages 4.3-18 through 4.3-20).

MM AIR-1: Air Quality Best Management Practices (BMPs). *During construction and decommissioning, the following measures shall be implemented:*

- *Ozone precursor emissions from mobile construction equipment shall be controlled by maintaining equipment engines in good condition and in proper tune per manufacturers' specifications. Equipment maintenance records and equipment design specification data sheets shall be kept onsite during construction.*

- *Electricity from power poles shall be used whenever practicable instead of temporary diesel- or gasoline-powered generators to reduce the associated emissions.*

- *To reduce construction vehicle (truck) idling while waiting to enter or exit the site, the contractor shall submit a traffic control plan pursuant to Mitigation Measure TRA-1 that will describe in detail safe detours to prevent traffic congestion to the best of the project's ability, and provide temporary traffic control measures during construction activities that will allow both construction and on-street traffic to move with less than 5-minute idling times.*

- *Construction equipment will use only California-certified diesel or gasoline fuels.*

- *The Applicant will use construction equipment that is at the Tier 4 interim emission level for equipment less than or equal to 81 horsepower and Tier 3 engines for all other equipment.*

MM AIR-2: Voluntary Emission Reduction Agreement (VERA).

1. *The developer shall enter into a Voluntary Emission Reduction Agreement (VERA) with the SJVAPCD prior to the issuance of ministerial construction/grading permits or stagger the construction periods for the three facilities to avoid a significant impact. Proof of payment to the SJVAPCD shall be provided prior to issuance of grading permits for construction. If "staggering" of the timing of the construction periods is used to avoid a significant impact, the developer shall provide documentation to the County prior to the commencement of construction activities to confirm that construction emissions would be reduced to below the applicable significance thresholds.*

2. *Twelve months prior to initiation of decommissioning activities, the Applicant shall prepare additional analysis to determine air quality impacts from the proposed decommissioning activities. If the emissions will exceed the SJVAPCD thresholds of signficance, the Applicant shall enter into a new VERA with the SJVAPCD to offset the decommissioning emissions below the thresholds of significance.*

Impact AQ-2 The proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM AQ-1 and MM AQ-2 is required or is incorporated into the project and would reduce the impact related to cumulatively considerable net increases in criteria pollutants to a less than significant level.

Section 4.3 of the Draft EIR found that construction and decommissioning emissions would result in exceedances of SJVAPCD NO_x and PM_{10} emissions thresholds, and therefore, mitigation is required. MM AIR-1 would reduce impacts associated with construction of the proposed project (all three facilities) but would not prevent an exceedance of SJVAPCD thresholds for NO_X and PM_{10}. Furthermore, although Regulation VIII substantially reduces fugitive dust emissions, it is not sufficient to reduce PM_{10} emissions to less than significant levels. If overlap between the construction of the facilities would occur, MM AIR-2 requires that a VERA be implemented which would reduce the impacts of overlapping construction emissions. The VERA would offset the NO_x emissions from construction activities so that the project would not exceed SJAPCD thresholds. Therefore, MM AQ-1 and MM AQ-1 would reduce potential cumulative impacts to a less than significant level. (Draft EIR pages 4.3-20 through 4.3-25).

MM AIR-1: Air Quality Best Management Practices (BMPs). *See MM AIR-1*

MM AIR-2: Voluntary Emission Reduction Agreement (VERA). *See MM AIR-2*

Impact AQ-3 The proposed project would not expose sensitive receptors to substantial pollutant concentrations.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM AQ-1 and MM AQ-2, is required or is incorporated into the project and would reduce the impact related to exposure of sensitive receptors to substantial pollutant concentrations to a less than significant level. Section 4.3 of the Draft EIR found that sensitive receptors within the project area could be exposed to fugitive dust and Diesel Particulate Matter (DPM) and therefore, MM AQ-1 and MM AQ-2 would be required to reduce fugitive dust and DPM emissions. MM AQ-1 requires that SJVAPCD Rule 9510 (Indirect Source Review) be implemented throughout construction activities, which would require construction equipment that is at the Tier 4 interim emission level or Tier 3 emission level. Use of such equipment would reduce the amount of DPM emissions and correspondingly reduce the above risk further below the threshold of significance. Additionally, MM AQ-2 requires that construction activities either be staggered, or requires the Developer to enter into a VERA which would offset the NO_x emissions from construction activities so that the project would not exceed SJAPCD thresholds, thus resulting a in a less than significant impact related to exposure of sensitive receptors to substantial pollutant concentrations. Impacts related to exposure of sensitive receptors to substantial pollutant concentrations would be less than significant with mitigation incorporated. (Draft EIR pages 4.3-25 and 4.3-26).

MM AIR-1: Air Quality Best Management Practices (BMPs). *See MM AIR-1*

MM AIR-2: Voluntary Emission Reduction Agreement (VERA). *See MM AIR-2*

Biological Resources

Impact BIO-1 The proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM BIO-1, MM BIO-2, MM BIO-3, MM BIO-4 is required or is incorporated into the project and would reduce the impact related to adverse effects on special-status species to a less than significant level. Section 4.4 of the Draft EIR discusses impacts to special-status species including nesting and migratory birds, raptors, bats, and other non-bird or bat species. Impacts to special-status species would occur mostly during construction activities, and would be effectively reduced with implementation of MM BIO-1 (General Measures for the Avoidance and Protection of Biological Resources) and MM BIO-2 (Reduce Construction-related Impacts to Nesting Birds). MM BIO-1 would require limiting construction disturbance near potentially biologically sensitive areas through fencing and flagging while also implementing measures to reduce erosion, potential entrapment of wildlife, and limiting the orientation and speed of construction traffic through the construction site. MM BIO-2 would ensure that potential impacts related to nesting birds are reduced to a less than significant level by conducting pre-construction surveys to document nests and establishing construction buffer zones around any potentially active nests.

Additionally, long-term impacts related to avian collisions would be effectively reduced with implementation of MM BIO-3 (Reduce Potential for Avian Collisions with Power Lines) and MM BIO-4 (Reduce Avian Collisions with Photovoltaic Array). MM BIO-3 requires that all power lines be designed in accordance with the Avian Power Line Interaction Committee (APLIC) Guidelines for reducing avian collisions. The design of all transmission lines and electrical components would be developed in accordance with APLIC guidance which would reduce the likelihood of large bird electrocutions and collisions. Further, MM BIO-4 would require design measures to reduce potential impacts related to avian collisions with the photovoltaic array through visual deterrents and use of light-colored, ultraviolet-reflective materials which would reduce the potential for bird collisions. Collectively, implementation of these MMs would ensure that impacts related to special-status species including nesting and migratory birds, raptors, and other non-bird or bat species are avoided or minimized to a less than significant level. (Draft EIR pages 4.4-13 through 4.4-19).

MM BIO-1: General Measures for the Avoidance and Protection of Biological Resources. *During construction, operation and maintenance, and decommissioning of the facility, the operator or contractor shall implement the following general avoidance and protective measures to protect San Joaquin kit fox and other special-status wildlife species:*

- *The operator shall limit the areas of disturbance. Parking areas, new roads, staging, storage, excavation, and disposal site locations shall be confined to the smallest areas possible. All proposed impact areas, including solar fields, staging areas, access routes, and disposal or temporary placement of spoils, shall be delineated with stakes and/or flagging prior to construction to avoid special-status species where possible. Construction-related activities, vehicles, and equipment outside of the impact zone shall be avoided.*

- *These areas shall be flagged, and disturbance activities, vehicles, and equipment shall be confined to these flagged areas.*

- *Spoils shall be stockpiled in disturbed areas that lack native vegetation. Best Management Practices (BMPs) shall be employed to prevent erosion in accordance with the project's approved Stormwater Pollution Prevention Plan (SWPPP). All detected erosion shall be remedied within two (2) days of discovery or as described in the SWPPP.*

- *To prevent inadvertent entrapment of wildlife during construction, all excavated, steep-walled holes or trenches with a 2-foot or greater depth shall be covered with plywood or similar materials at the close of each working day or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they shall be thoroughly inspected by the approved biological monitor for trapped animals. If trapped animals are observed, escape ramps or structures shall be installed immediately to allow escape. If a listed species is trapped, the U.S. Fish and Wildlife Service (USFWS) and/or California Department of Fish and Wildlife (CDFW) shall be contacted immediately.*

- *All construction pipes, culverts, or similar structures with a 4-inch or greater diameter that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for special-status wildlife or nesting birds before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If an animal is discovered inside a pipe, that section of pipe shall not be moved until the Lead Biologist has been consulted and the animal has either moved from the structure on its own accord or until the animal has been captured and relocated by the Lead Biologist.*

- *Vehicles and equipment parked on the sites shall have the ground beneath the vehicle or equipment inspected for the presence of wildlife prior to moving.*

- *Vehicular traffic shall use existing routes of travel. Cross-country vehicle and equipment use outside of the project properties shall be prohibited.*

- *A speed limit of 20 miles per hour shall be enforced within all construction areas.*

- *A long-term trash abatement program shall be established for construction, operations, and decommissioning and submitted to the County. Trash and food items shall be contained in closed containers and removed daily to reduce the attractiveness to wildlife such as common raven (Corvus corax), coyote (Canis latrans), and feral dogs.*

- *Workers shall be prohibited from bringing pets and firearms to the project site and from feeding wildlife in the vicinity.*

- *Intentional killing or collection of any wildlife species shall be prohibited.*

MM BIO-2: Reduce Construction-related Impacts to Nesting Birds. *Ensure that active nests of raptors and other special-status nesting birds are not affected as a result of the proposed project.*

If construction work is scheduled to take place outside of the avian nesting season (September 16 through January 31), no action would be required to protect nesting birds. If any activities that could harm birds or their nests (e.g., clearing temporary workspaces; staging or stockpiling machinery or supplies; parking vehicles, equipment, or trailers; grading or leveling; creating stockpiles of dirt or gravel; or any activity that could cover existing habitat or disrupt surface soils) occur during the avian nesting season (February 1 through September 15), the following measures shall be implemented to avoid impacts on nesting raptors and other protected and common birds:

- *No more than 14 days prior to construction, a qualified wildlife biologist shall conduct preconstruction surveys of all construction sites to determine if birds or nests are present. Surveys may be phased as construction is phased, so that each section is surveyed no more than 14 days prior to the start of construction in that area.*

- *If active nests are found during preconstruction surveys, a no-disturbance buffer shall be created around nests until it is determined that all young have fledged or until the recognized nesting season has ended (i.e., September 15 annually). The size of any employed buffers will vary based on the species that is nesting, the status of the nest, site conditions, and work to be completed during the active period of the nest. All buffers will be appropriately sized, based on USFWS published recommendations to avoid take to the nest. The size of the buffer zones and types of construction activities restricted in these areas could be further modified during construction in coordination with CDFW and shall be based on the existing level of noise and human disturbance on the project site.*

- *If preconstruction surveys indicate that nests are inactive, or potential habitat is unoccupied during the construction period, no further action is required. Trees and shrubs within the construction footprint determined to be unoccupied by nesting birds or that are outside the no-disturbance buffer for active nests could be removed.*

- *To prevent impacts to SWHA, construction within one half-mile of the windbreak identified in photo point 4c of the Biological Survey (ESA 2016) shall occur after*

the bird nesting season (September 15). If construction cannot be deferred until this date, a preconstruction survey shall be performed to determine if SWHA are present. If no SWHA are detected by the survey, then construction may proceed, otherwise it must be deferred until after the nesting season. If SWHA are detected, then activities shall not proceed until after September 15.

MM BIO-3: Reduce Potential for Avian Collisions with Power Lines. *Avian Power Line Interaction Committee (APLIC) Guidelines in accordance with Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012) will be incorporated into the power line design to minimize the likelihood of avian electrocutions. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with APLIC guidance to reduce the likelihood of large bird electrocutions and collisions (APLIC 2012).*

MM BIO-4: Reduce Avian Collisions with Photovoltaic Array.

- *Visual deterrents to encourage bird avoidance of the project site will be installed. These deterrents will be made of a material that is both reflective and highly visible, such that the material reflects ambient light and is stimulated by air movement. The effect of such installation will create the visual impression of continuous and varied movement, which has been shown as an avian deterrent in agricultural applications. An example of the types of material that could be used includes reflective tape. Within 30 days after project commissioning, materials will be installed in 50-acre blocks within the solar facility on a 3-month trial basis to examine panel performance issues. Following the initial 3-month period, visual deterrents will either be adjusted to reduce performance issues and reexamined on continuing 3-month basis, or if adjustments are not deemed necessary to improve panel performance, deployed on the remainder of the site and maintained for the life of the project or until determined infeasible (based on the definition of "feasible" in California Environmental Quality Act (CEQA) Guidelines Section 15364) or ineffective by the project owner in consultation with CDFW and the County.*

- *Panels shall include, if feasible, a light-colored, ultraviolet (UV)-reflective, or otherwise nonpolarizing outline, frame, grid, or border, which has been shown to substantially reduce panel attractiveness to aquatic insects, which in turn would reduce the attractiveness of the panels to birds that feed on the aquatic insects (Horvath et al. 2010) in order to reduce avian mortality by avoiding collisions with panel faces (NFWFL 2014).*

Impact BIO-4 The proposed would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of wildlife nursery sites.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM BIO-5 is required or is incorporated into the project and would reduce the impact related to the movement of migratory wildlife to a less than significant level. Potential impacts related to the navigational abilities of nocturnal wildlife species, such as bats and owls, or species that disperse at night could occur from nighttime lighting that would be introduced to the project site. Lighting will be manually controlled for operation and maintenance activities, with all project lighting to be used only as determined by the motion sensors, security requirements, prudent utility practices, and as necessary for operation and maintenance activities. However, additional measures would be required in order to ensure that nocturnal wildlife are not adversely impacted by nighttime lighting introduced to the area. MM BIO-5 would be required and would include requirements for the location of nighttime lighting (i.e. away from transmission lines) as well as use of narrow spectrum blubs. This measure would reduce the effects of nighttime lighting on wildlife. Impacts would be less than significant with mitigation incorporated. (Draft EIR page 4.4-21).

MM BIO-5 Reduce Impacts to Nocturnal Wildlife from Lighting.

- *No lighting shall be placed near or oriented towards any transmission lines running through the project site to avoid affecting wildlife that may use this area for nighttime movement.*
- *Narrow spectrum bulbs shall be used to limit the range of species affected by project lighting.*

Cultural Resources

Impact CUL-1 The proposed project would not cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM CUL-1 and MM CUL-2 is required or is incorporated into the project and would reduce the impact related to substantial adverse changes in the significance of a historic resource to a less than significant level. Section 4.5 of the Draft EIR found that there is one cultural resource located within the project site (Gates-Gregg 230 kV transmission line/P-10-006640); however, it is located outside of the construction area and would not be impacted by project activities. There is still the possibility that previously unknown historic resources could be discovered on the project site during construction, and therefore, MM CUL-1 (Retain a Qualified Archaeologist) and MM CUL-2 (Inadvertent Discovery of Archaeological Resources or Tribal Cultural Resources) would be required. Retention of a qualified archaeologist and establishing procedures in the event of inadvertent discovery of archaeological materials would be required through MM CUL-1 and MM CUL-2 and impacts to historical and unique archaeological resources from construction of the project would mitigate impacts

to a less than significant level. These mitigation measures give priority to first avoid any discovered resources, if possible, and if not possible, then the qualified archaeologist would develop additional treatment measures in consultation with Fresno County related to data recovery or other appropriate measures. Impacts related to undiscovered resources encountered during construction activities would therefore be less than significant with mitigation incorporated. (Draft EIR pages 4.5-9 and 4.5-10).

MM CUL-1: Retain a Qualified Archaeologist: *The Applicant/contractor shall retain a qualified archaeologist, defined as an archaeologist meeting the Secretary of the Interior's Standards for professional archaeology (USDOI 2017a), to carry out all Mitigation Measures related to archaeological and historical resources prior to the issuance of demolition or grading permits. The Applicant shall ensure that the qualified archaeologist has conducted a Cultural Resources Awareness Training for all construction personnel working on the proposed project. The training shall include an overview of potential cultural resources that could be encountered during ground disturbing activities to facilitate worker recognition, avoidance, and subsequent immediate notification to the qualified archaeologist for further evaluation and action, as appropriate, and penalties for unauthorized artifact collecting or intentional disturbance of archaeological resources. The qualified archaeologist shall conduct construction worker archaeological resources sensitivity training prior to the start of ground-disturbing activities. In the event that construction is phased, additional trainings shall be conducted for all new construction personnel. The training sessions shall focus on the recognition of the types of archaeological resources that could be encountered at the project site and the procedures to be followed if they are found. Documentation shall be retained demonstrating that all construction personnel attended the training.*

MM CUL-2: Inadvertent Discovery of Archaeological Resources or Tribal Cultural Resources: *If prehistoric or historic-era cultural resources are encountered during the course of grading or construction, all ground-disturbing activities within 50 feet of the find shall cease. The qualified archaeologist shall evaluate the significance of the resources and recommend appropriate treatment measures. Per California Environmental Quality Act (CEQA) Guidelines Section 15126.4(b)(3)(A), project redesign and preservation in place shall be the preferred means to avoid impacts to significant archaeological sites. Consistent with CEQA Guidelines Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures in consultation with Fresno County, which may include data recovery or other appropriate measures. Fresno County shall consult with appropriate Native American representatives in determining appropriate treatment for unearthed cultural resources if the resources are prehistoric or Native American in nature. Archaeological materials recovered during any investigation shall be curated at an accredited curational facility. The qualified archaeologist shall prepare a report documenting evaluation and/or additional treatment of the resource. A copy of the report shall be provided to Fresno County and to the Southern San Joaquin Valley Information Center. Construction can recommence based on direction of the qualified archaeologist.*

Impact CUL-2 The proposed project would not cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM CUL-1 and MM CUL-2 is required or is incorporated into the project and would reduce the impact related to substantial adverse changes in the significance of a historic resource to a less than significant level. The Section 4.5 of the Draft EIR found that there is one cultural resource located within the project site (Gates-Gregg 230 kV transmission line/P-10-006640); however, it is located outside of the construction area and would not be impacted by project activities. There is still the possibility that previously unknown historic resources could be discovered on the project site during construction, and therefore, MM CUL-1 (Retain a Qualified Archaeologist) and MM CUL-2 (Inadvertent Discovery of Archaeological Resources or Tribal Cultural Resources) would be required. Retention of a qualified archaeologist and establishing procedures in the event of inadvertent discovery of archaeological materials would be required through MM CUL-1 and MM CUL-2 and impacts to historical and unique archaeological resources from construction of the project would mitigate impacts to a less than significant level. These MMs give priority to first avoid any discovered resources, if possible, and if not possible, then the qualified archaeologist would develop additional treatment measures in consultation with Fresno County related to data recovery or other appropriate measures. Impacts related to undiscovered resources encountered during construction activities would therefore be less than significant with mitigation incorporated. (Draft EIR page 4.5-10).

MM CUL-1: Retain a Qualified Archaeologist. *See MM CUL-1*

MM CUL-2: Inadvertent Discovery of Archaeological Resources or Tribal Cultural Resources. *See MM CUL-2*

Impact CUL-3 The proposed project would not disturb any human remains, including those interred outside of formal cemeteries.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM CUL-3 is required or is incorporated into the project and would reduce the impact related to substantial adverse changes in the significance of an archaeological resource to a less than significant level. Section 4.5 of the Draft EIR found that although there are no known human remains located within or near the project site, previously unrecorded burials could be discovered onsite during construction activities. Therefore, MM CUL-3 (Inadvertent Discovery of Unmarked Burials) would be required in order to ensure that any burials discovered

onsite would be appropriately treated and documented. MM CUL-3 would require contacting the Fresno County Coroner and notifying the Native American Heritage Commission (NAHC) if the remains are determined to be Native American in origin by the Coroner, thus ensuring that any remains potentially discovered on site are treated in accordance with state regulation. Therefore, impacts related to previously undiscovered burials would be less than significant with mitigation incorporated. (Draft EIR page 4.5-11).

> ***MM CUL-3: Inadvertent Discovery of Unmarked Burials.*** *If human remains are uncovered during project construction, the project operator shall immediately halt work within 50 feet of the find, contact the Fresno County Coroner to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.4 (e)(1). If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified, in accordance with Health and Safety Code Section 7050.5(c), and Public Resources Code (PRC) 5097.98 (as amended by Assembly Bill 2641). The NAHC shall designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, and the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in PRC Section 5097.98 with the MLD regarding their recommendations for the disposition of the remains, taking into account the possibility of multiple human remains.*

Geology and Soils

Impact GEO-5 The proposed project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM GEO-1, MM GEO-2, and MM GEO-3 is required or is incorporated into the project and would reduce the impact related to paleontological resources to a less than significant level. Section 4.6 of the Draft EIR found the potential for paleontological resources to be present onsite is low to high depending on the location within the site. Because inadvertent discovery of paleontological resources onsite is possible, MM GEO-1 (Retain a Qualified Paleontologist), MM GEO-2 (Pre-Construction Training), and MM GEO-3 (Inadvertent Discovery of Paleontological Resources) are required to ensure that previously undiscovered paleontological resources that may be discovered onsite are treated appropriately, and that workers are trained on notification of such resources. MM GEO-1 specifically requires a qualified paleontologist monitor onsite to report and treat any potential paleontological resources that may be discovered during construction activities. MM GEO-2 would further require that all construction workers are trained on

identification and treatment procedures for potential paleontological resources that could be discovered during construction activities. If any paleontological resources area discovered during construction activities, then MM GEO-3 would be implemented which includes stopping all work within 50-feet of the discovery, evaluation of the potential resource, and recover and/or document the discovery. Collectively these MMs would ensure that potential damage to paleontological resources would be less than significant. (Draft EIR pages 4.6-17 and 4.6-18).

MM GEO-1: Retain a Qualified Paleontologist. *A qualified paleontologist, defined as one meeting the Society of Vertebrate Paleontology Standards (the "Qualified Paleontologist") shall be retained prior to the issuance of grading permits. The Qualified Paleontologist shall provide technical and compliance oversight of all work as it relates to paleontological resources, attend the project kick-off meeting and project progress meetings on a regular basis, and report to the site in the event that potential paleontological resources are encountered.*

MM GEO-2: Pre-construction Training. *The Qualified Paleontologist shall conduct Paleontological Resources Awareness Training for all construction personnel. This may be conducted in conjunction with the archaeological resources training. The training shall include an overview of potential paleontological resources that could be encountered during ground-disturbing activities to facilitate worker recognition, avoidance, and subsequent immediate notification to the Qualified Paleontologist for further evaluation and action, as appropriate; and penalties for unauthorized collecting or intentional disturbance of paleontological resources. A sign-in sheet shall be completed and retained to demonstrate attendance at the awareness training. In the event that construction crews are phased, additional trainings shall be conducted for new construction personnel. The training session shall focus on the recognition of the types of paleontological resources that could be encountered within the project site and the procedures to be followed if they are found. Documentation shall be retained demonstrating that all construction personnel attended the training.*

MM GEO-3: Inadvertent Discovery of Paleontological Resources. *If a paleontological resource is found, all ground-disturbing activities within 50 feet of the find shall immediately cease. The Qualified Paleontologist shall evaluate the significance of the resources and recommend appropriate treatment measures. At each fossil locality, field data forms shall be used to record pertinent geological data, stratigraphic sections shall be measured, and appropriate sediment samples shall be collected and submitted for analysis. Any fossils encountered and recovered shall be catalogued and donated to a public, nonprofit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County. Accompanying notes, maps, and photographs shall also be filed at the repository. The Qualified Paleontologist shall prepare a report documenting evaluation and/or additional treatment of the resource. The report shall be filed with the County and with the repository.*

Full-time paleontological resources monitoring shall be conducted for all ground-disturbing activities occurring in older Quaternary alluvium or the Tulare Formation, which is estimated to occur at or below approximately 10 feet in depth. Paleontological resources monitoring shall be performed by a qualified paleontological monitor (or cross-trained archaeological/paleontological monitor) under the direction of the Qualified Paleontologist. Monitors shall have the authority to temporarily halt or divert work away from exposed fossils to recover the fossil specimens. Any significant fossils collected during proposed project-related excavations shall be prepared to the point of identification and curated into an accredited repository with retrievable storage. Monitors shall prepare daily logs detailing the types of activities and soils observed and any discoveries. The Qualified Paleontologist shall prepare a final monitoring and mitigation report to document the results of the monitoring effort.

Greenhouse Gases

Impact GHG-1 The proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM GHG-1 and MM GHG-2 is required or is incorporated into the project and would reduce the impact related to generation of greenhouse gas (GHG) emissions to a less than significant level. Section 4.7 of the Draft EIR found that construction and decommissioning would result in a net reduction in GHG emissions related to the solar facility, however, MM GHG-1 (Greenhouse Gas Reduction Measures) would be implemented to further reduce any GHG emissions related to both construction and decommissioning activities. MM GHG-1 includes measures such as encouraging carpooling, implementing a waste recycling program, and minimizing welding during construction activities. These measures would reduce GHG emissions by reducing vehicle trips, minimizing waste which leads to more landfill impacts, and reducing emissions from welding activities, all which could contribute to GHG emissions from the project. Operational emissions would occur from motor vehicle traffic, water usage, and potential leaks in SF_6 gas from high-voltage switchgear. MM GHG-2 (Circuit Breakers) would be required in order to ensure that all breakers have a manufacturer's guaranteed SF_6 leakage rate of 0.5 percent per year or less, which limits operational GHG emissions from entering the environment. Therefore, impacts related to generation of GHG emissions would be less than significant with mitigation incorporated. (Draft EIR pages 4.7-11 through 4.7-13).

MM GHG-1: Greenhouse Gas Reduction Measures. *In order to further reduce greenhouse gas emissions, the Applicant shall:*

- *Prior to the start of construction, develop and implement a program encouraging construction workers to carpool or use public transportation for travel to and from construction sites.*

- *Implement a construction waste recycling program with the objective of recycling at least 65% of the project waste (by weight), pursuant to the California Green Building Standards Code. This is discussed further in Section 4.16, Utilities.*

- *Minimize welding and cutting by requiring the use of compression of mechanical applications where practical and within standards.*

MM GHG-2: Circuit Breakers. *All breakers used for this project will have a manufacturer-guaranteed sulfur hexafluoride (SF_6) leakage rate of 0.5% per year or less.*

Impact GHG-2 The proposed project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM GHG-1 and MM GHG-2 is required or is incorporated into the project and would reduce the impact related to conflict with an applicable plan, policy, or regulation related to GHG reduction to a less than significant level. The Scoping Plan Measure H-6 from the Renewable Portfolio Standard (RPS) requires reduction of SF_6 leaks, than therefore, in order to comply with this measure, MM GHG-2 would be required to ensure that breakers are manufacturer-guaranteed with a leak rate of 0.5% per year or less, thus ensuring consistency with this measure from the RPS. Further, the RPS generally requires reduction in GHG emissions and an increase in reliance on renewable energy sources. MM GHG-1, described further under Impact GHG-1, would ensure that construction activities reduce GHG emissions to the maximum extent possible, by decreasing vehicle trips, decreasing waste diverted to landfills, and reducing GHG emission-producing construction activities. Therefore, impacts would be less than significant with mitigation incorporated. (Draft EIR pages 4.7-13 and 4.7-14).

MM GHG-1: Greenhouse Gas Reduction Measures. *See MM GHG -1.*

MM GHG-2: Circuit Breakers. *See MM GHG-2*

Hazards and Hazardous Materials

Impact HAZ-2 The proposed project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the hazardous materials into the environment.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM HAZ-1 is required or would be incorporated into the project and would reduce the impact related to creating a significant hazard to the public or the environment to a less-than-significant level. Section 4.8 of the Draft EIR found that operation of the project could result in in potential exposure to hazards through the solar panel materials, which are made from microcrystalline silicon. MM HAZ-1 (Broken Photovoltaic Module Detection and Handling Plan) requires the Developer to prepare and implement a broken PV module detection and handling plan, which would minimize the potential for microcrystalline silicon leaching from damaged panels, and would reduce the potential for the release of hazardous materials from damaged panels. MM HAZ-1 details the handling protocol, timing of removal, and recycling or disposal requirements that would be required as part of the plan, thus reducing the potential for hazardous materials to be released into the environment. Therefore, impacts from broken PV modules would be reduced to a less than significant level with mitigation incorporated. (Draft EIR pages 4.8-15 through 4.8-17).

MM HAZ-1: Broken Photovoltaic Module Detection and Handling Plan. *Prior to the issuance of construction permits, the Applicant shall prepare and implement a broken photovoltaic (PV) module detection and handling plan. The plan shall describe the Applicant's method for identifying, handling, and disposing of PV modules that may break, chip, or crack at some point during the project's life cycle. The proposed methods shall be compliant with applicable law and protective of human health and the environment. The plan shall have but not be limited to the following elements:*

- ***Worker Health and Safety Provisions and Handling Protocol.*** *This protocol shall address isolating workers from hazardous materials during the recovery of broken PV panels and shall include, but not be limited to the following requirements:*
    - *Workers shall wear gloves during the handling of broken pieces of PV panels to prevent cuts.*
    - *If broken pieces are separated from the PV panel, the pieces shall be collected, and the areal extent of the collected pieces shall be compared to*

the broken area on the PV panel to ensure that all the pieces have been accounted for.

- *The broken pieces shall be placed in drums, sealed boxes, puncture-proof bags, or equivalent containers so as to prevent the broken pieces from tearing the containers and being rereleased into the environment.*

- ***Timing of removal.*** *The PV panels shall be inspected for breakage prior to each PV panel washing event. In the event that broken PV panels are discovered, the broken PV panels and any pieces shall be removed prior to washing any adjacent PV panels.*

- ***Recycling or disposal requirements.*** *If available, broken panels shall be sent to a PV panel manufacturing facility licensed for the recycling of PV panels; if recycling is unavailable, the broken panels shall be sent to a landfill licensed to receive broken PV panels. The plan shall identify the likely facility to receive broken panels.*

  The plan shall be submitted to the County for review and approval and shall be distributed to all construction crew members and temporary and permanent employees prior to construction and operation of the proposed project. All available data from the panel manufacturer(s) regarding materials used and safety procedures and concerns shall be appended to the plan to assist the County with identifying potential hazards and abatement measures.

Impact HAZ-5 The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM HAZ-2 is required or is incorporated into the project and would reduce the impact related to exposure of people or structures to significant wildfire risk to a less than significant level. Section 4.8 of the Draft EIR found that because construction of the project would require heavy equipment, welding, and other activities, the potential exists for these pieces of equipment to spark, thus potentially causing a fire which could result in a significant impact. However, implementation of MM HAZ-2 (Fire Protection Plan) would be required which would train personnel with appropriate fire response actions, appropriately equip equipment with fire extinguishers, and prohibit smoking within the project site. These measures would reduce the potential for a fire to occur and spread out from the project site. Therefore, with implementation of mitigation, the impact would be less than significant. (Draft EIR pages 4.8-18 through 4.8-20).

MM HAZ-2: Fire Protection Plan. *The Applicant shall prepare a Fire Protection Plan prior to issuance of construction permits. The Fire Protection Plan shall include but not be limited to the following measures:*

- *Internal combustion engines, stationary and mobile, shall be equipped with spark arresters in good working order.*
- *All personnel shall be trained in fire safety practices relevant to their duties.*
- *All construction and maintenance personnel shall be trained and equipped to extinguish small fires.*
- *Work crews shall have fire-extinguishing equipment on hand, as well as emergency numbers and cell phones or other means of contacting the Fire Department.*
- *Security gates shall be approved by the Fire Department and shall include the installation of a key switch or padlock, whichever is most appropriate.*
- *Smoking shall be prohibited while operating equipment and shall be limited to paved or graveled areas or areas cleared of all vegetation. Smoking shall be prohibited within 30 feet of any combustible material storage area (including fuels, gases, and solvents). Smoking shall be prohibited in any location during a Red Flag Warning issued by the National Weather Service for the project area.*

Land Use and Planning

Impact LUP-1 The proposed project would cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Finding: Changes or alterations have been required in, or incorporated into, the project, however, impacts would remain significant and unavoidable after implementation of all feasible mitigation (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM AG-1 is required or is incorporated into the project, but will not reduce adverse impacts to a less than significant level. The project would convert 1,600 acres of agricultural land to a non-agricultural use. Impacts related to conversion of agriculture land is described further in Section 4.2 of the Draft EIR. Section 4.10 of the EIR also discusses conversion of agriculture land. MM AG-1 requires the preparation of a reclamation plan; however, given the extended life of the project and the loss of 1,600 acres of Prime Farmland, the impact to agricultural land was determined to remain significant and unavoidable.

With the exception of a 1.25-acre parcel located in the interior of the site, the entire project site is restricted by Williamson Act Contracts. The purpose of the Williamson Act is to offer landowners tax incentives to keep their land in agricultural use. The project is not a permitted or compatible use on land enrolled in the Williamson Act Program;

therefore, all the contracts are currently being petitioned for cancellation by the landowners. Government Code (GC) Sections 51280 through 51283 set forth procedures for cancelling a Williamson Act Contract. As discussed in Section 4.2, Agriculture, the proposed project would conflict with the existing Williamson Act Contracts; therefore, this is a significant impact.. Therefore, even with implementation of MM AG-1, the permanent conversion of Williamson Act contracted lands would be a significant and unavoidable impact. As discussed above, the project is not consistent with County's General Plan goals and policies for the protection of agricultural lands, specifically the following goals and policies (Draft EIR page 4.10-18).

- Goal LU-A: the project would convert a large acreage of Prime Farmland that has been actively farmed to a solar facility.
- Policy LU-A.2: The project is not an activity related to the production of food and fiber and is not a use that is incidental or secondary to the onsite agricultural production.
- Policy LU-A.3: the project is not a special agricultural use and is not agriculturally-related. Solar facilities are not included in the General Plan Table LU-3, which lists non-agricultural uses determined to be consistent with agricultural operations.
- Policy PF-C.3: The proposed project would rely on the existing onsite wells for water use during construction, operation, and decommissioning. Construction water demand would be 300 acre-feet total and operations would require 4 to 10 acre-feet per year. Decommissioning water demand would be comparable to construction demand at 300 acre-feet. However, depending on available quantities, the Applicant may also be able to obtain water from the WWD. Therefore, the proposed project would not be consistent with this policy, as it would potentially continue to use groundwater.

MM AG-1: Reclamation Plan. *See MM AG-1*

Noise

Impact NOI-1 The proposed project would not result in the generation of a substantial temporary or permanent increase in noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM NOI-1, MM NOI-2, MM NOI-3, and MM NOI-4 is required or is incorporated into the project and would reduce the impact related to generation of substantial temporary or permanent increases in noise levels to a less than significant level.

Section 4.12 of the Draft EIR found that construction of the project would result in a temporary elevation in noise levels that could adversely affect nearby sensitive receptors. Therefore MM NOI-1 (Stationary Construction Equipment), MM NOI-2 (Equipment Staging Areas), and MM NOI-3 (Construction and Decommissioning Equipment) would be required to ensure that the project considers the location of sensitive receptors when siting noise-generating equipment and by requiring mufflers on loud equipment. These measures would reduce the temporary increases in ambient noise levels (an estimated 10 dBA increase from construction activities to the nearest sensitive receptor) to a level that is barely perceptible from ambient conditions. Additionally, MM NOI-4 (Construction and Decommissioning Hours) would be required to ensure that construction activities are consistent with the County's noise ordinance standards. Specifically, construction activities would be restricted to the hours between 6:00 AM and 9:00 PM on weekdays and 7:00 AM and 5:00 PM on Saturdays and Sundays, thus would be consistent with applicable standards in the area relative to construction noise. Similarly, these same mitigation measures would be required during decommissioning activities in order to reduce potential noise impacts to a barely perceptible level. Therefore, with implementation of mitigation, impacts related to generation to noise in excess of standards would be less than significant. (Draft EIR page 4.12-14 and 4.12-17).

MM NOI-1: Stationary Construction Equipment. *All stationary equipment shall be placed so that emitted noise is directed away from sensitive receptors nearest to the project site during construction and decommisioning activities.*

MM NOI-2: Equipment Staging Areas. *Equipment staging shall be located in areas as far as feasible from noise-sensitive receptors nearest to the project site during all project construction and decommissioning activities.*

MM NOI-3: Construction and Decommissioning Equipment. *All construction and decommissioning equipment shall be equipped with manufacturer-approved mufflers and baffles.*

MM NOI-4: Construction and Decommissioning Hours. *During all project construction and decommissioning, all noise-producing construction-related activities shall be limited to the hours of 6:00 AM to 9:00 PM, Monday through Friday, and to the hours of 7:00 AM to 5:00 PM on Saturdays and Sundays.*

Transportation and Traffic

Impact TRA-1 The proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM TRA-1, MM TRA-2, and MM TRA-3 is required or is incorporated into the project and would reduce the impact related to confliction of a program, policy, or ordinance addressing the circulation system to a less than significant level. Section 4.14 of the Draft EIR found that although construction and decommissioning activities associated with the proposed project would be short-term, MM TRA-1, MM TRA-2, and MM TRA-3 would be required in order to be consistent with local regulations and policies and maintain reduce potentially significant impact to a less than significant level. MM TRA-1 (Construction and Decommissioning Traffic Control and Management Plan), MM TRA-2 (Preconstruction and Pre-Decommissioning Road Survey Report), and MM TRA-3 (Road Repair Agreement) would be required to ensure that circulation systems are maintained and the roadways used are adequately restored to pre-project conditions though fair share agreements. These measures would ensure that the delays on local roadways are minimized, level of service on the roadways is maintained, and safety measures are implemented. Therefore, the project would be consistent with local plans, policies, and programs relative to the County's circulation system. (Draft EIR pages 4.14-5 through 4.14-9).

MM TRA-1: Construction and Decommissioning Traffic Control and Management Plan. *Prior to issuance of construction permits, building permits, or encroachment permits, the Applicant and/or its construction contractors shall prepare and submit a traffic control and management plan to Fresno County Department Public Works and Planning and the California Department of Transportation (Caltrans) District 6 office for approval. The traffic control and management plan shall be prepared in accordance with both the California's Manual on Uniform Traffic Control Divisions and Work Area Traffic Control Handbook and must include but not be limited to the following items:*

- *Specify timing of deliveries of heavy equipment and building materials.*
- *Direct construction traffic with a flagger.*
- *Place temporary signage, lighting, and traffic control devices, if required, including but not limited to appropriate signage along access routes to indicate the presence of heavy vehicles and construction traffic.*
- *Ensure access for emergency vehicles to the project site.*
- *Maintain access to adjacent property.*
- *Specify both construction-related vehicle travel and oversize-load haul routes, minimize construction traffic during the AM and PM peak hours, and avoid residential neighborhoods to the maximum extent feasible.*
- *Obtain all necessary permits from the appropriate agencies for work within the road right-of-way or use of oversized/overweight vehicles, which may require California Highway Patrol or a pilot car escort.*

- *Submit plans for any work on the proposed intersection improvements on Lassen Avenue at the site access driveways to the County and Caltrans District 6 for review and approval prior to the issuance of any encroachment or road improvement permit for the work.*

- *Clean or remove any material that is deposited onto the roadways as soon as possible and at least prior to the end of each working day.*

- *Obtain any access easements from private property owners necessary to perform required repair work.*

MM-TRA-2: Preconstruction and Pre-Decommissioning Road Survey Report. *A preconstruction report and a pre-decommissioning report shall be prepared by a qualified registered engineer to include a detailed analysis of road suitability to accommodate haul trucks during project construction. The report shall be submitted to the Fresno County Department of Public Works and Planning. Prior to initiating the preconstruction or decommissioning report, the proposed methodology shall be presented to the Fresno County Department of Public Works and Planning for review and approval. Improvements to existing roads may be necessary based on the findings of the report.*

MM TRA-3: Road Repair Agreement. *Prior to the start of construction, the Applicant shall enter into a secured agreement with the County to ensure that the proposed project contributes its fair-share portion towards repairs of any County roads that are impacted by this project. The scope of impacts shall be determined in consultation with the Fresno County and Caltrans District 6.*

Impact TRA-3 The proposed project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM TRA-1, MM TRA-2, and MM TRA-3 is required or is incorporated into the project and would reduce the impact related to increases in hazards to a less than significant level. Section 4.14 of the Draft EIR found that a Traffic Control and Management Plan would be required (MM TRA-1) and a road survey report (MM TRA-2) would be prepared and submitted to the Fresno County Department of Public Works and Planning and the Caltrans District 6 office for approval. In addition, a road repair agreement (MM TRA-3) would be required as well. Furthermore, the project would not include a design feature or use vehicles with incompatible uses that would create a hazard on the roadways surrounding the project site. With implementation of mitigation, the impacts would be less than significant. (Draft EIR page 4.14-11).

MM TRA-1: Construction and Decommissioning Traffic Control and Management Plan. *See MM TRA-1*

MM TRA-2: Preconstruction and Pre-Decommissioning Road Survey Report. *See MM TRA-2*

MM TRA-3: Road Repair Agreement. *See MM TRA-3*

Impact TRA-4 The proposed project would not result in inadequate emergency access.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM TRA-1 is required or is incorporated into the project and would reduce the impact related to emergency access to a less-than-significant level. As described above in impact TRA-2, increased project-related traffic would not cause a significant increase in congestion and would not significantly affect the existing LOS on area roads. Furthermore, the project would not require closures of public roads that could inhibit access by emergency vehicles. During construction of the project, heavy construction-related vehicles could interfere with emergency response to the site or evacuation procedures in the event of an emergency (e.g., slowing vehicles traveling behind the truck). However, a Traffic Control and Management Plan would be required (Mitigation Measure TRA-1). With implementation of mitigation, the impacts would be less than significant. (Draft EIR page 4.14-12).

MM TRA-1: Construction and Decommissioning Traffic Control and Management Plan. *See MM TRA-1*

Tribal Cultural Resources

Impact TRI-1 The proposed project would not cause a substantial adverse change in the significance of a tribal cultural resource listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or by the lead agency pursuant to criteria set forth in Public Resources Code Section 5024.1(c).

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM CUL-1 and MM CUL-2 is required or is incorporated into the project and would reduce the impact related to adverse changes to tribal cultural resources to a less than significant level. Section 4.15 of the Draft EIR found that construction activities such as trenching and grading could potentially damage or destroy previously undiscovered tribal cultural resources. Therefore, MM CUL-1 and MM CUL-2 would be required to ensure that any previously

undiscovered tribal cultural resources encountered during construction activities are treated appropriately in accordance with all applicable federal, state, and local requirements. MM CUL-1 and MM CUL-2 would require retention of a qualified archaeologist and establishing procedures in the event of inadvertent discovery of tribal cultural resources and thus would reduce the potential impact to a less than significant level. These measures would give priority to first avoid any discovered resources, if possible, and if not possible, then the qualified archaeologist would develop additional treatment measures in consultation with Fresno County related to data recovery or other appropriate measures. Impacts related to undiscovered resources encountered during construction activities would therefore be less than significant with mitigation incorporated. (Draft EIR pages 4.15-3 and 4.15-4).

MM CUL-1: Retain a Qualified Archaeologist. *See MM CUL-1*

MM CUL-2: Inadvertent Discovery of Archaeological Resources or Tribal Cultural Resources. *See MM CUL-2*

Wildfire

Impact WF-3 The proposed project would not require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

Finding: Changes or alterations have been required in, or incorporated into, the project that avoid or substantially lessen the significant effects of the project on the environment. (Pub. Res. Code §2 l08J(a)(l); 14 Cal. Code Regs.§ 1509l(a)(l)).

Facts in Support of Finding: Implementation of MM HAZ-2 is required or is incorporated into the project and would reduce the impact related to adverse changes to installation of maintenance infrastructure to a less than significant level. Section 4.17 of the Draft EIR found that because there would be onsite mechanical equipment which could produce sparks and thus a potential wildfire, MM HAZ-2 would be required and would ensure that a fire management plan is prepared and implemented for the project site. MM HAZ-2 would include measures such as having internal combustion engines, stationary, and mobile equipped with spark arresters; training personnel in fire safety practices; and including fire-extinguishing equipment on-site. The Applicant would coordinate with CALFIRE and the Fresno County Fire Protection District to provide fire responders and project staff with appropriate fire response training. The intent of this training would be to familiarize both responders and project staff with potential fire hazards and reduction processes associated with solar power and energy storage facilities. The fire protection plan would be submitted to the Fresno County Fire Protection District for approval prior to the start of construction. Therefore, installation of the proposed project would not exacerbate fire risk, and impacts would be less than significant with implementation of MM HAZ-2. (Draft EIR page 4.17-5).

MM HAZ-2: Fire Protection Plan. *See MM HAZ-2*

2.3 LEGAL EFFECT OF FINDINGS

These findings constitute the County's best efforts to set forth the evidentiary and policy bases for its decision to approve the project in a manner that is consistent with the requirements of CEQA. To the extent that these findings conclude that various mitigation measures outlined in the Final EIR are feasible and have not been modified, superseded, or withdrawn. These findings, in other words, are not merely informational, but rather constitute a binding set of obligations that will come into effect when the County adopts a resolution approving the project.

2.4 MITIGATION MONITORING AND REPORTING PROGRAM

A Mitigation Monitoring and Reporting Program (MMRP) has been prepared for the project. The County will use the Mitigation Monitoring and Reporting Program to track compliance with project mitigation measures. The MMRP will remain available for public review during the compliance period. The final MMRP is provided as a separate exhibit to the Final EIR, is incorporated into the environmental document approval resolution, and is approved in conjunction with certification of the EIR and adoption of these Findings of Fact.

As a condition of approval, the applicant will be required to enter into an Agreement with the County to fund a Third Party Mitigation Monitor to ensure compliance with the Mitigation Measures included in the MMRP.

2.5 SIGNIFICANT EFFECTS AND MITIGATION MEASURES

The Draft EIR identified a number of significant and potentially significant environmental effects (or impacts) that the project would cause or to which it would contribute. Most of these significant effects can be substantially avoided through the adoption of feasible mitigation measures. However, other effects cannot be avoided by the adoption of feasible mitigation measures or alternatives, and thus will be significant and unavoidable. The County's recommendations with respect to the project's significant effects and mitigation measures are set forth in Section 2.2, Findings Required Under CEQA and in the MMRP, which is provided as a separate exhibit to the Final EIR. Section 2.2 does not attempt to describe the full analysis of each environmental impact contained in the EIR. Instead, it provides a summary description of each impact, describes the applicable mitigation measures identified in the EIR, and states the County's findings on the significance of each impact after imposition of the mitigation measures. A full explanation of these environmental findings and conclusions can be found in the Draft EIR, and these findings incorporate by reference the discussion and analysis in those documents supporting the EIR's determinations regarding the project's impacts and mitigation measures designed to address those impacts.

2.6 GROWTH INDUCEMENT

As required by Section 15126.2(d) of the CEQA Guidelines, an EIR must discuss ways in which a proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Also, the EIR must discuss the characteristics of the project that could encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. Growth can be induced in a number of ways, such as through the elimination of obstacles to growth, the stimulation of economic activity within the region, or the establishment of policies or other precedents that directly or indirectly encourage additional growth. Under CEQA, this growth is not to be considered necessarily detrimental, beneficial, or of significant consequence. Induced growth would be considered a significant impact if it can be demonstrated that the potential growth significantly affects the environment either directly or indirectly.

In general, a project could foster spatial, economic, or population growth in a geographic area if the project removes an impediment to growth (e.g., the establishment of an essential public service, the provision of new access to an area, or a change in zoning or General Plan amendment approval), or economic expansion or growth occurs in an area in response to the project (e.g., changes in revenue base, employment expansion).

Potential growth-inducing components of the project include employment and population growth, increased power generation and regional population growth, and increased transmission capacity that serves renewable power development.

Employment and Population Growth

The project would not cause direct population growth through the provision of residential housing. Construction phases of the project are expected to overlap, and the number of construction workers onsite is expected to range between 20 and 300 workers per day, with the peak number of workers onsite during the eighth- and ninth-months overlap. Workers are expected to be hired from within the County to the extent practicable. Some of the workers originating outside of the County would temporarily relocate to accommodations within the County for the duration of construction activities. The demand for temporary accommodations during construction would be accommodated by existing housing in the region, and no new housing would be needed.

No more than 11 full-time staff would be employed during operation of the proposed project. Considering the high vacancy rates in the County, it is anticipated that adequate housing would be available without necessitating the need for new housing. Therefore, project operation would not result in new growth in the area relating to the potential population increase.

There would be no new growth in employment and housing in the area from new restaurants, mobile home parks, convenience stores, or other services that would serve the workers during project construction, because existing facilities in the region would be adequate to accommodate both the construction and operations workforces.

Increased Power Generation

While the proposed project would contribute to energy supply, which would indirectly support population growth, the development of the proposed project is responding to the state's need for renewable energy to meet its Renewable Portfolio Standards (RPS) while at the same time increasing sources of renewable energy being produced in the County. Unlike a gas-fired power plant, the proposed project is not being developed as a source of base load power in response to growth in demand for electricity. The power generated would be added to the state's electricity grid, with the intent that it would allow for an overall reduction in power use by PG&E, as well as reduce the use of fossil-fueled power plants and their GHG emissions.

County planning documents permit and anticipate a certain level of population growth and energy use growth. The purpose of the Fresno County General Plan and Zoning Ordinance is to address this anticipated growth. The anticipated growth drives energy production projects, not vice versa. The proposed project would supply energy to accommodate and support existing County and PG&E customers' energy demands, but it would not foster any new growth for the following reasons: (1) the additional energy would be used to ease the burdens of meeting existing statewide energy demands within and beyond the project area; ((2) the energy would be used to support already-projected growth; and (3) the factors affecting growth are so diverse that any potential connection between additional energy production and growth would necessarily be too speculative and tenuous to merit extensive analysis.

Increased Transmission Capacity

The development of the proposed project would include a single onsite substation that would collect the medium voltage circuits that carry power from the solar facilities and prepare that power for transmission to the point of interconnect. The power from the onsite substation would then be transferred to the Gates Substation via new 230-kV overhead gen-tie line. No upgrades are proposed to the Gates Substation that would increase transmission capacity. PG&E is an investor-owned utility, regulated by CPUC. The utility's transmission system is operated by CAISO under regulations established by the Federal Energy Regulatory Commission. When an electricity generator requests use of PG&E's transmission facilities, PG&E is required to provide access after completion of power flow and cost studies. CPUC evaluates each PG&E project to ensure that its need and costs are justified and appropriate, and that financial effects on California electricity ratepayers are appropriate. Any transmission system upgrades that are required as a result of other solar projects would need to be evaluated by CPUC in accordance with CEQA as a part of the CPUC permitting process. Because any potential transmission system upgrades would be speculative, the potential for population growth induced by the transmission system upgrades from other solar facilities would also be speculative. Therefore, the proposed project is not expected to be large enough to induce the development of other large solar projects and population growth in the region; however, given the increased importance of renewable energy in California, other landowners may determine that the conversion of some of their land holdings to non-agricultural use is economically feasible.

Extension of Urban Infrastructure

As discussed in the Draft EIR Section 4.16, Utilities, the project would not require any permanent wastewater connections due to its general lack of population onsite during operation. Temporary portable facilities used during construction would not affect the operation or function of wastewater treatment facilities located on or adjacent to the project site.

The project would not require or result in the construction of new water treatment facilities. Construction and operational demand for water would be well within or below the volume of groundwater extracted and applied to the project site over the past decade.

The project site does not contain any stormwater drainage facilities, and no stormwater drainage facilities would be constructed. The project would be constructed to follow the existing topography of the project site to limit erosion potential and maintain existing drainage patterns.

Due to the general lack of population onsite during operation, the proposed project would not need any permanent electric power and natural gas facilities. Similarly, due to the general lack of population onsite during operation, the proposed project would not need any additional telecommunication facilities.

2.7 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL EFFECTS

Section 15126.2(c) of the CEQA Guidelines defines an irreversible impact as an impact that uses nonrenewable resources during the initial and continued phases of the project. Irretrievable commitments of resources should be evaluated to ensure that such consumption is justified. Irreversible impacts can result from loss of habitat of sensitive biological resources, change in land use, damage caused by environmental accidents associated with project construction or operation, or damage to cultural or paleontological resources.

Construction of the proposed project would result in the long-term conversion of 1,600 acres of Prime Farmland. The Applicant has committed to restoring land back to agricultural use after project decommissioning and would submit a reclamation plan to the County pursuant to Mitigation Measure AG-1. However, even with a reclamation plan, the proposed project would result in a conversion of Prime Farmland to non-agricultural use and would require the cancellation of Williamson Act contracts. Conversion of the site from an agricultural use to a non-agricultural use and cancellation of Williamson Act contracts would, therefore, be considered a significant irreversible commitment and loss of agricultural resources.

Construction of the proposed project would require a permanent commitment of natural resources from the direct consumption of fossil fuels, construction materials, and energy required for the production of materials, as well as the manufacture of new components; most project components would be recycled at the end of the project's useful life. The proposed project would also result in significant impacts on air quality due to emissions of nitrogen oxides (NO_X), and particulate matter less than ten microns in diameter (PM_{10}) and GHGs during construction. However, mitigation measures would be implemented that would reduce the impacts on air quality to a less than significant level. In addition, the project would offset its

construction, operational lifetime, and decommissioning fuel and emissions use in 7 months of operation. After all of the proposed project's lifetime emissions have been offset, the proposed project would generate a natural gas equivalent of 1,541,143 million British Thermal Units per year (MMBTU/year) or a coal equivalent of 210,155 MMBTU/year.

Construction and operation of the proposed project would require the use of a limited amount of hazardous materials such as fuel, lubricants, and cleaning solvents. During project construction and operation, preexisting soil staining identified in Phase I would be avoided. All hazardous materials would be stored, handled, and used in accordance with applicable federal, state, and local regulations. The Applicant would be required to develop and comply with a Stormwater Pollution Prevention Plan (SWPPP) as well as best management practices. Appropriate implementation of these plans and practices, as well as Mitigation Measure HAZ-1, which addresses broken PV module detection and handling would reduce the potential for environmental accidents associated with the proposed project to less than significant levels. The proposed project is not expected to result in environmental accidents that would cause irreversible damage.

The primary objective of the proposed project is to construct and operate a solar PV power-generating facility capable of producing 170 MW in a cost-competitive manner. Other objectives include interconnecting at the Gates Substation because that would directly help lower the project costs, facilitating the primary objective and assisting California with meeting its obligations under the RPS. Assisting with the RPS would help California meet its renewable energy goals, which have been developed to reduce the effects of global climate change and GHG emissions. The proposed project would develop a renewable source of power, helping to offset the use of nonrenewable resources and contribute to an overall reduction of nonrenewable resources currently used to generate electricity. Resources that would be consumed as a result of project implementation include water, electricity, and fossil fuels during construction and operations; however, the amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of resources over the long-term. Compliance with all applicable building codes as well as County policies and the mitigation measures identified in this EIR would ensure that natural resources are conserved to the extent feasible.

2.8 PROJECT ALTERNATIVES

Basis for Alternatives-Feasibility Analysis

Significant and Unavoidable Impacts of the Project

Under CEQA, where a significant impact can be substantially lessened (i.e., mitigated to an "acceptable level") solely by the adoption of mitigation measures, the agency, in drafting its findings, has no obligation to consider the feasibility of alternatives with respect to that impact, even if an alternative would mitigate the impact to a greater degree than the proposed project. (PRC Section 21002; *Laurel Hills Homeowners Association v. City Council*, 83 Cal.App.3d 515, 521 [1978] ["Laurel Hills"]; see also *Kings County Farm Bureau v. City of Hanford*, 221.

Cal.App.3d 692, 730-731 [1990]; *Laurel Heights Improvement Association v. Regents of the University of California*, 47 Cal.3d 376, 400-403 [1988]).

All of the potential environmental impacts associated with adoption and implementation of the proposed project were found to be either less than significant without mitigation or less than significant with mitigation, with the exception of four impacts associated with agriculture resources and land use, which were found to be significant and unavoidable with mitigation measures.

Scope of Necessary Findings and Considerations for Project Alternatives

These findings address whether the various alternatives substantially lessen or avoid any of the significant unavoidable impacts associated with the project and also consider the feasibility of each alternative.

In identifying potentially feasible alternatives to the project, the following project objectives were considered:

- Construct and operate a solar PV power-generating facility capable of producing up to 170 MW alternating current in a cost competitive manner.
- Interconnect directly to the CAISO high-voltage electrical transmission system (grid) to the Gates Substation.
- Assist California utilities in meeting their obligations under California's RPS Program, including 60 percent of retail sales from renewable sources by the end of 2030.
- Assist California utilities in meeting their obligations under CPUC's Energy Storage Framework and Design Program, including procurement targets of 1,325 MW by 2020, by providing up to 100 MW of storage capacity.
- Provide renewable-energy-related and diversified job opportunities and training that will help reduce local unemployment and benefit the local economy.

Under CEQA Guidelines Section 15126.6, the alternatives to be discussed in detail in an EIR should be able to "feasibly attain most of the basic objectives of the project[.]" For this reason, the objectives described above provided the framework for evaluating possible alternatives.

The Draft EIR Section 5.0, Comparison of Alternatives, evaluated three Project alternatives in accordance with the parameters set forth by CEQA Guidelines 15126.6: "No Project," "Reduced Acreage," and "Site-West." In addition, other alternatives were initially considered but ultimately rejected from further consideration: "Phelp's Site," "Non-Contracted Lands," "Impaired or Underutilized Lands," "Phased Development," and "Distributed Power." All alternatives were initially evaluated on their ability to meet project objectives, feasibility, and whether they would avoid or substantially reduce the proposed project's significant environmental impacts. Based on this initial evaluation, the "No Project," "Reduced Acreage," and "Site-West" alternatives were identified as warranting further analysis, while the "Phelp's Site," "Non-Contracted Lands,"

“Impaired or Underutilized Lands,” “Phased Development,” and “Distributed Power” alternatives were rejected because they either did not meet the project objectives, did not reduce environmental impacts, or were infeasible.

Based on the requirements of CEQA Guidelines Section 15126.6, the project objectives, and the rejection of the initially considered alternatives listed above, the following alternatives to the Project were set forth in the EIR and are summarized in Table 1:

1. No Project Alternative
2. Reduced Acreage Alternative
3. Site-West Alternative

Analysis of Project Alternatives

The purpose of a discussion of alternatives to a project in an EIR is to provide a reasonable range of potentially feasible alternatives that are capable of avoiding or substantially lessening any significant environmental effect of a project, even if the alternatives would impede to some degree the attainment of the project objectives or would be costlier. The range of alternatives describes those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects.

CEQA Guidelines Section 15126.6 provides that an EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. “The discussion of alternatives is subject to a construction of reasonableness.” (*Residents Ad Hoc Stadium Committee v. Board of Trustees* [1979] 89 Cal.App.3d 274.) A feasible alternative is an alternative capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors. A feasible alternative is also one that accomplishes the project’s “underlying fundamental purpose.”

The EIR satisfies the requirements of CEQA by providing a reasonable range of alternatives, each of which is intended to address the means by which the unavoidable adverse impacts of the project can be lessened.

Determining the feasibility of project alternatives involves a reasonable balancing of various economic, environmental, social, and technological factors. (*California Native Plant Society v. City of Santa Cruz* [2009] 177 Cal.App.4th 957, 1001; *City of Del Mar v. City of San Diego* [1982] 133 Cal.App.3d 401, 417.)

1. No Project Alternative

Pursuant to CEQA Guidelines Section 15126.6(e)(1), the No Project Alternative is required as part of the “reasonable range of alternatives” to allow decision-makers to compare the impacts of approving the proposed project with the impacts of taking no action or not approving the

proposed project. Under this alternative, the proposed project would not be constructed, and the project site would remain in its current condition.

a. Description

The No Project Alternative assumes that no development would occur on the project site. The project site would remain in agricultural production with a crop of tomatoes planted with wheat or would remain partially fallow. In addition, cancellation of Williamson Act contracts and conversion of Prime Farmlands would not be required. The Williamson Act Contracts would still expire in 2025.

b. Analysis of the No Project Alternative's Ability to Reduce Significant and Unavoidable Project Impacts

The No Project Alternative would have fewer impacts on resources than the proposed project. However, the No Project Alternative would not realize the air quality and GHG benefits of the proposed project.

c. Analysis of the No Project Alternative's Ability to Meet the Project Objectives

The No Project Alternative would not achieve any of the project objectives as shown below:

- The No Project Alternative would not construct and operate a solar PV power-generating facility capable of delivering 170 MW alternating current to the Gates Substation in a cost-competitive manner.
- The No Project Alternative would not directly interconnect the CAISO high-voltage electrical transmission system (grid) to the Gates Substation.
- The No Project Alternative would not assist California utilities in meeting their obligations under California's RPS Program, including 60 percent of retail sales from renewable sources by the end of 2030.
- The No Project Alternative would not assist California utilities in meeting their obligations under CPUC's Energy Storage Framework and Design Program, including procurement targets of 1,325 MW by 2020, by providing up to 100 MW of storage capacity.
- The No Project Alternative would not provide renewable-energy-related and diversified job opportunities that would help reduce local unemployment and benefit the local economy.

d. Feasibility of the No Project Alternative

Because the No Project alternative would not meet the Project objectives, and because the No Project alternative would not provide the same benefits as the proposed Project, it is not a feasible alternative.

2. Reduced Acreage Alternative

a. Description

Under the Reduced Acreage Alternative, the Stonecrop facility (CUP 3563) would not be constructed, and the footprint of the Fifth Standard facility would be reduced. The total MW capacity at the project site would be reduced by 20 MW, and the project footprint would be reduced by approximately 317 acres.

In addition, the 150-MW Fifth Standard facility would be redesigned to do the following: a) use PV modules rated at a higher watt class, and b) reduce the spacing between tracker rows. The Reduced Acreage Alternative boundary would include Assessor's Parcel Numbers 075-060-52S, 075-070-35S, 075-060-15S, 075-070-01S, 075-070-33S, 075-070-32S, 075-070-34S.

b. Analysis of the Reduced Acreage Alternative's Ability to Reduce Significant and Unavoidable Project Impacts

This alternative would reduce but not eliminate significant and unavoidable impacts on agricultural resources.

c. Analysis of the Reduced Acreage Alternative's Ability to Meet the Project Objectives

The Reduced Acreage Alternative would not achieve the project objective shown below.

- The Reduced Acreage Alternative would not construct and operate a solar photovoltaic power-generating facility capable of delivering 170 MW alternating current to the Gates Substation in a cost competitive manner.

d. Feasibility of the Reduced Acreage Alternative

As is stated earlier, CEQA defines feasible as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors. (14 CCR Section 15364.)

While the Reduced Acreage Alternative would reduce the impact to agricultural resources and land use, it would not reduce those impacts to a less than significant level. The Reduced Acreage Alternative would not meet the important project objective of generating 170 MW alternating current to the Gates Substation in a cost-competitive manner.

3. Site-West Alternative

a. Description

Under the Site-West Alternative, the PV electricity-generating facilities, a battery storage facility, and associated infrastructure would be constructed on three noncontiguous parcels totaling 1,109.69 acres approximately 4 miles west of the project site.

b. Analysis of the Site-West Alternative's Ability to Reduce Significant and Unavoidable Project Impacts

The Site-West Alternative would have similar impacts to resources compared to the proposed project, with the exception of agriculture and land use, where it would avoid impacts to Williamson Act contracted lands. However, the Site-West Alternative would still require conversion of Prime Farmland, which would conflict with County policies to preserve agricultural lands; therefore, the impact would continue to remain significant and unavoidable. The Site-West Alternative would result in greater impacts to aesthetics, biological resources, and hydrology and water quality in comparison to the proposed project. The Site-West Alternative would result in a reduced amount of renewable energy resources to help the state meet its renewable energy and GHG reduction targets.

c. Analysis of the Site-West Alternative's Ability to Meet the Project Objectives

The Site-West Alternative would not achieve the project objective shown below.

- The Site-West Alternative would not construct and operate a solar photovoltaic power-generating facility capable of delivering 170 MW alternating current to the Gates Substation in a cost-competitive manner given the distance to the Gates Substation, the higher cost of land acquisition, and the need to address site constraints through enhanced engineering and design efforts.

d. Feasibility of the Site-West Alternative

The Site-West Alternative would not reduce the significant and unavoidable impacts to agricultural resources and land use to a less than significant level and would result in greater impacts to aesthetics, biological resources, and hydrology and water quality in comparison to the proposed project. The Site-West Alternative would not meet the objectives of constructing and operating a solar PV power generating facility of 170 MW alternating current in a cost-competitive manner given the additional gen-tie line length and the increased cost of land acquisition due to the permanent crops currently planted on two of the parcels and a third parcel planted in organic crops. Additionally, the Site-West Alternative would require additional design costs due to the non-contiguous nature of the site.

4. The Environmentally Superior Alternative

The qualitative environmental effects of each alternative relative to the proposed project are summarized in Table 1.

In addition to the discussion and comparison of impacts of the proposed project and the alternatives, Section 15126.6 of the CEQA Guidelines requires that an "environmentally superior" alternative be selected and the reasons for such a selection be disclosed. In general, the environmentally superior alternative is the alternative that would be expected to generate the least environmental impact. Identification of the environmentally superior alternative is an

informational procedure, and the alternative selected may not be the alternative that best meets project objectives.

The EIR designated the Reduced Acreage Alternative as the environmentally superior alternative in compliance with CEQA Guidelines 15126.6(e).

5. Alternatives Rejected from Further Consideration

CEQA Guidelines Section 15126.6(c) requires EIRs to identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process, and briefly explain the reasons underlying the lead agency's determination. Section 15126.6(c) provides that among the factors that may be used to eliminate alternatives from detailed consideration in and EIR are (i) failure to meet most of the basic Project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts. The following potential alternatives initially were considered but then eliminated from further consideration based on the screening criteria described in the Draft EIR:

- Alternative Locations
  - Phelps Site Alternative
  - Non-Contracted Lands Alternative
  - Impaired or Underutilized Lands
- Phased Development Alternative
- Distributed Power Alternative

The **Phelp's Site Alternative** proposed to construct the project at an alternate site approximately 5 miles southwest in the community of Coalinga. While the Phelp's Site would have met all of the proposed project objectives and is feasible, it would not have reduced or avoided a significant environmental effect of the proposed project. With the exception of agricultural impacts, which would have been slightly reduced with the Phelp's Site, this alternative would have had potentially greater impacts associated with additional ground disturbance. Therefore, this alternative was eliminated from further consideration.

The **Non-Contracted Lands Alternative** proposed to construct the project at non-contracted lands that were both available and suitable for the proposed use but not under an active Williamson Act contract (non-contracted lands). For operational efficiency and economic feasibility, a site of approximately 1,500 contiguous acres was considered to be optimal for the proposed project. However, to ensure that a comprehensive search was undertaken for suitable land, all sites of 1,000 acres or larger were considered. A search radius of up to 10 miles was set around the Gates Substation. Beyond this distance, the high cost of construction of the gen-tie line between the solar facility and the substation would make the project economically infeasible, as even construction of a gen-tie of 5 miles or more in length presents challenges for the proposed project. Of the 29 sites initially screened, only three were within 5 miles of the Gates Substation and only one site (Alternative Site-West) had enough acreage for the

proposed project. Alternative Site-West was carried forward as a potential alternative. All other sites considered by this review were rejected as infeasible.

The **Impaired or Underutilized Lands Alternative** would have located the project onto contaminated or underutilized sites appropriate for solar-PV projects. The two potential sites identified as Mount Owen Rifle Range and the Fresno Air Terminal/Old Hammer Field were determined to have adequate acreage to support the Project, however there was the potential to have greater hydraulic impacts, and the feasibility of implementing the project at either location was uncertain due to system capacity. Additionally, this alternative would not have met the objective of delivering a minimum of 170 MW to the Gates substation, which was selected as a potentially suitable substation for interconnection in the Central Valley and was confirmed by CAISO and PG&E to have interconnection capacity and favorable interconnection costs. Therefore, this alternative was eliminated from further consideration.

The **Phased Development Alternative** would have been constructed over 3 years instead of the current proposed 1-year construction schedule. The Phased Development Alternative was considered because it would have avoided the potentially significant impact to air quality before the application of mitigation. The construction activities for the Phased Development Alternative would have been spread out for a longer time-frame and would have resulted in comparatively longer-term aesthetics and noise impacts resulting from construction activities. Significant impacts on agricultural resources that would have occurred under the proposed project would have been the same once all phases of the project are constructed. While the Phased Development Alternative would have addressed potentially significant air quality impacts, it may have exacerbated impacts to noise and aesthetics during construction. The remaining construction impacts of this alternative would have been similar to the proposed project. Therefore, this alternative was eliminated from further consideration.

The **Distributed Power Alternative** would have located solar panels onto the roofs of residential, commercial, industrial, and institutional buildings throughout the County to achieve the 170-MW production capacity. This alternative would not have been technically feasible. The distributed power alternative would have been outside of the control of the Applicant, as the Applicant neither owns nor has site control over rooftops; therefore, there was no guarantee about the quantity of power potentially generated, nor could the alternative have been implemented within a reasonable period of time.

Accordingly, the Distributed Power Alternative was speculative, not feasible, and would have failed to meet proposed project objectives of providing battery storage and developing a utility-scale renewable energy development. As a result, the Distributed Power Alternative was eliminated from detailed analysis as an alternative to the proposed project.

Table 1: Comparison of Environmental Effects

Environmental Resource Area	Proposed Project	No Project (Alternative 1)	Reduced Acreage (Alternative 2)	Alternative Site-West (Alternative 3)
Aesthetics	Impacts determined to be less than significant with mitigation incorporated	Lesser impact than the proposed project because the project would not be constructed, operated, or decommissioned.	Similar impact to the proposed project but reduced impact to visual character and quality due to the reduced footprint.	Similar impact to the proposed project but potentially greater impacts due to proximity to I-5 and sensitive receptors on South El Dorado Avenue.
Agricultural Resources	Impacts determined to be significant and unavoidable	Lesser impact than the proposed project because no conversion of farmland or conflicts with Williamson Act would occur.	Similar impact to the proposed project, but the reduced footprint would result in less conversion of farmland.	Similar impact to the proposed project, but the reduced footprint would result in less conversion of farmland. Williamson Act contract lands would not be converted, but the site continues to include conversion of Prime Farmland.
Air Quality	Impacts determined to be less than significant with mitigation incorporated	Greater impact than the proposed project because the No Project Alternative would continue to generate emissions from farm equipment.	Similar impact to the proposed project, but the reduced project footprint would result in fewer air quality emissions generated during construction, operation, and decommissioning and lower emission offsets during operation.	Similar or greater impact than the proposed project. Although there would be a reduced project footprint, increased distance of gen-tie line would lead to increased construction emissions.

Environmental Resource Area	Proposed Project	No Project (Alternative 1)	Reduced Acreage (Alternative 2)	Alternative Site-West (Alternative 3)
Biological Resources	Impacts determined to be less than significant with mitigation incorporated	Lesser impact than the proposed project because the site would continue to be used for agriculture, and the proposed project would not be constructed, operated, or decommissioned.	Similar impact to the proposed project, but the reduced footprint would result in fewer impacts to biological resources.	Similar or greater impact to the proposed project. Although there would be a reduced project footprint, increased distance of gen-tie line could lead to increased avian collision. Also, a water feature passes through the site, resulting in potential adverse impacts to more special-status species.
Cultural Resources	Impacts determined to be less than significant with mitigation incorporated	Lesser impact than the proposed project because the site would continue to be used for agriculture, and the proposed project would not be constructed, operated, or decommissioned.	Similar impact to the proposed project, but the reduced footprint would result in less potential to encounter undiscovered cultural resources. However, there is still the possibility to encounter such resources.	Similar impact to the proposed project, but the reduced footprint would result in less potential to encounter undiscovered cultural resources. However, there is still the possibility to encounter such resources.
Geology and Soils	Impacts determined to be less than significant with mitigation incorporated	Lesser impact than the proposed project because the site would continue to be used for agriculture, and the proposed project would not be constructed, operated, or decommissioned.	Similar impact to the proposed project because the geological and paleontological setting would be the same. There is the same potential that the site would be subject to ground shaking, landslides, erosion, and unstable/ expansive soils or that inadvertent discovery of paleontological resources would occur.	Similar impact to the proposed project because the geological and paleontological setting would be the same. There is the same potential at this location as the proposed project that the site would be subject to ground shaking, landslides, erosion, and unstable/ expansive soils or that inadvertent discovery of paleontological resources would occur.

Environmental Resource Area	Proposed Project	No Project (Alternative 1)	Reduced Acreage (Alternative 2)	Alternative Site-West (Alternative 3)
Greenhouse Gas Emissions	Impacts determined to be less than significant with mitigation incorporated	Greater impact than the proposed project because the No Project Alternative would continue to generate emissions from farm equipment.	Similar impact to the proposed project, but the reduced project footprint would result in fewer GHG emissions generated during construction, operation, and decommissioning.	Similar or greater impact than the proposed project. Although there would be a reduced project footprint, the increased distance of the gen-tie line would lead to increased construction emissions.
Hazards and Hazardous Materials	Impacts determined to be less than significant with mitigation incorporated	Lesser impact than the proposed project because the site would continue to be used for agriculture, and the project would not be constructed, operated, or decommissioned.	Similar impact to the proposed project, but the reduced project footprint would require fewer hazardous materials to be used during construction, operation, and decommissioning.	Similar impact to the proposed project, but the reduced project footprint would require fewer hazardous materials to be used during construction, operation, and decommissioning.
Hydrology and Water Quality	Impacts determined to be less than significant with mitigation incorporated	Lesser impact than the proposed project because land would continue to be used for agriculture and would not require new impervious surfaces.	Similar impact to the proposed project because impacts related to water quality standards, groundwater supplies, drainage, runoff, and flooding would continue to occur.	Similar or greater impact to the proposed project because impacts related to water quality standards, groundwater supplies, drainage, runoff, and flooding would continue to occur. However, the site includes a water feature and is within a 100-year floodplain.

Environmental Resource Area	Proposed Project	No Project (Alternative 1)	Reduced Acreage (Alternative 2)	Alternative Site-West (Alternative 3)
Land Use	Impacts determined to be significant and unavoidable	Lesser impact than the proposed project because no conversion of farmland or conflicts with Williamson Act would occur.	Similar impact to the proposed project, but the reduced footprint would result in less conflict with General Plan Policies due to the reduction in conversion of farmland.	Similar impact to the proposed project, but Alternative Site-West would result in less conversion of farmland. Williamson Act contract lands would not be converted, but the site continues to include conversion of Prime Farmland and would conflict with preservation policies.
Minerals	No Impact	Similar impact to the proposed project because the project site does not contain important mineral resources.	Similar impact to the proposed project because the project site does not contain important mineral resources.	Similar impact to the proposed project because the project site does not contain important mineral resources.
Noise	Impacts determined to be less than significant with mitigation incorporated	Lesser impact than the proposed project because the site would continue to be used for agriculture, and the proposed project would not be constructed, operated, or decommissioned.	Similar impact to the proposed project, but the reduced project footprint would result in less overall noise and vibration during construction, operation, and decommissioning.	Similar impact to the proposed project, but Alternative Site-West would result in less overall noise and vibration during construction, operation, and decommissioning.
Public Services	Impacts determined to be less than significant	Lesser impact than the proposed project because the site would continue to be used for agriculture, and the proposed project would not be constructed, operated, or decommissioned. No new public services would be required.	Similar impact to the proposed project; the reduced project footprint would result in lesser need for fire and police protections services.	Similar impact to the proposed project; Alternative Site-West - would result in lesser need for fire and police protections services.

Environmental Resource Area	Proposed Project	No Project (Alternative 1)	Reduced Acreage (Alternative 2)	Alternative Site-West (Alternative 3)
Transportation	Impacts determined to be less than significant with mitigation incorporated	Lesser impact than the proposed project because the site would continue to be used for agriculture, and the proposed project would not be constructed, operated, or decommissioned and would not result in new transportation impacts.	Similar impact to the proposed project, but the reduced project footprint would result in less overall vehicle trips during construction, operation, or decommissioning. Thus, would not result in new transportation impacts.	Similar impact to the proposed project, but Alternative Site-West would result in less overall truck trips during construction, operation, or decommissioning. Thus, would not result in new transportation impacts.
Tribal Cultural Resources	Impacts determined to be less than significant with mitigation incorporated	Lesser impact than the proposed project because the site would continue to be used for agriculture, and the proposed project would not be constructed, operated, or decommissioned.	Similar impact to the proposed project, but the reduced footprint would result in less potential to encounter undiscovered tribal cultural resources. However, there is still the possibility to encounter such resources.	Similar impact to the proposed project, but Alternative Site-West would result in less potential to encounter undiscovered tribal cultural resources. However, there is still the possibility to encounter such resources.
Utilities	Impacts determined to be less than significant	Lesser impact than the proposed project because the site would continue to be used for agriculture; the proposed project would not be constructed, operated, or decommissioned; and no new utility infrastructure would be required. However, water usage required to sustain farming operation would continue, which would be greater than the project.	Similar impact to the proposed project, but the reduced footprint would result in less water use, wastewater generation, and solid waste generation. No new expanded wastewater treatment or stormwater facilities would be required.	Similar impact to the proposed project, but Alternative Site-West would result in less water use, wastewater generation, and solid waste generation. No new expanded wastewater treatment or stormwater facilities would be required.

Environmental Resource Area	Proposed Project	No Project (Alternative 1)	Reduced Acreage (Alternative 2)	Alternative Site-West (Alternative 3)
Wildfire	Impacts determined to be less than significant with mitigation incorporated	Lesser impact than the proposed project because the proposed project would not be constructed, operated, or decommissioned and thus would not result in potential fire hazards due to the malfunctioning of equipment or faulty electrical equipment that is capable of spontaneous ignition due to overheating.	Similar impact to the proposed project because of the potential to result in fire hazards due to the malfunctioning of equipment or faulty electrical equipment that is capable of spontaneous ignition due to overheating.	Similar impact to the proposed project because of the potential to result in fire hazards due to the malfunctioning of equipment or faulty electrical equipment that is capable of spontaneous ignition due to overheating.
Energy	Impacts determined to be less than significant	Similar impact to the proposed project because the No Project Alternative would continue to use energy for farming operations.	Similar impact to the proposed project, but the reduced project footprint would result in fewer energy demands during construction, operation, and decommissioning. Additionally, energy generation capacity would less than the proposed project under this alternative.	Similar impact to the proposed project, but Alternative Site-West would result in fewer energy demands during construction, operation, and decommissioning. Additionally, energy generation capacity would be less than the proposed project under this alternative.

Operational Statement

Purpose of Conditional Use Permit Application

EC&R Solar Development, LLC, (EC&R) (the Applicant), is proposing to construct, operate, maintain, and decommission the Fifth Standard Solar Project Complex (the "Project") on a 1,588-acre site in unincorporated Fresno County, 2 miles east of Interstate 5, and approximately 13 miles east of Coalinga (the "Project site"). The Project (**Figure 1**) comprises three facilities:

- Fifth Standard Solar Facility: a 150 megawatt (MW) photovoltaic (PV) solar energy generation facility that is anticipated to require up to 1,400 acres of the site.
- Stonecrop Solar Facility: a 20 MW PV facility that would be located adjacent to Fifth Standard Solar and would require less than 200 acres of the site.
- Blackbriar Battery Storage Facility: a 20 MW battery storage facility that would be located adjacent to Fifth Standard and Stonecrop, and would utilize less than 5 acres of the site.

The three facilities are proposed for processing separately, with each having its own Unclassified Conditional Use Permit so that the electricity/storage capacity from each facility could be sold separately or in combination.

Project Applicant Contact Information

The following information should be used when contacting the Project Applicant:

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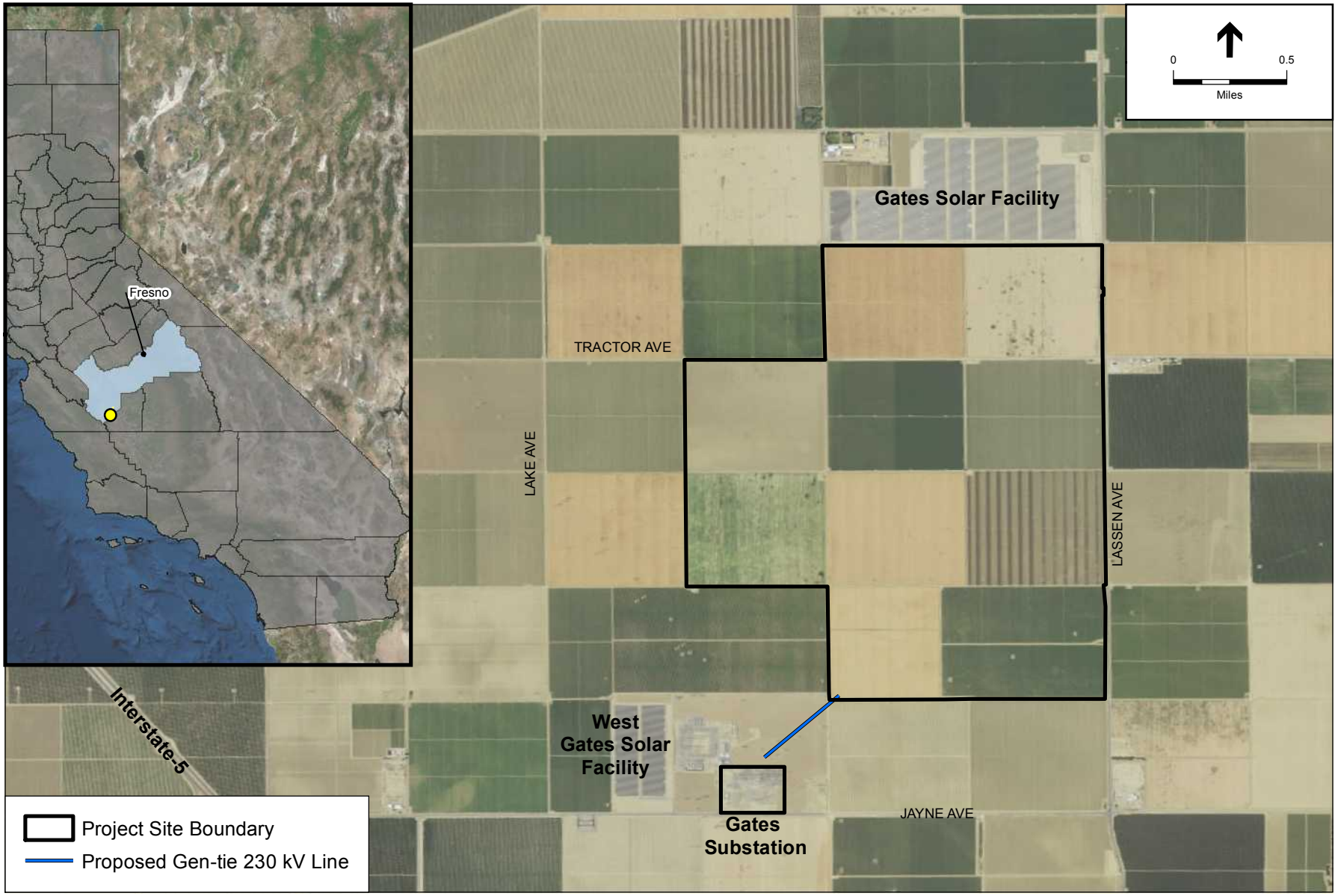


Fifth Standard Solar Project Complex. 120251

Figure 1

Project Location

Site Description

The Project site is located near Huron, California, in an unincorporated area of Fresno County. Lassen Avenue (California State Route 269) borders the eastern side of the property and is the only paved road in the immediate vicinity of the site. Trinity Avenue, Tractor Avenue, and Phelps Avenue intersect the site, but are not improved roads. Nearby communities include Huron (1.5 miles north), Avenal (10 miles south), Ora (11 miles west), Kettleman City (12 miles southeast), and Coalinga (13 miles west).

Surrounding land uses include farmland, the Pacific Gas and Electric Company's (PG&E's) Gates Substation and two nearby solar generating facilities (Gates Solar and West Gates Solar) (see Figure 1). The Gates Substation is located 0.4 mile southwest of the Project site. The existing West Gates Solar facility is adjacent to the Gates Substation, 0.5 mile southeast of the site. The Gates Solar facility is located to the north and immediately adjacent to the Project site. Interstate 5 (I-5) is located approximately 2 miles west of the site. The Pleasant Valley Ecological Reserve is located across I-5, 6 miles west of the site (CDFW, 2016). New Coalinga Municipal Airport is located approximately 9 miles to the west of the site.

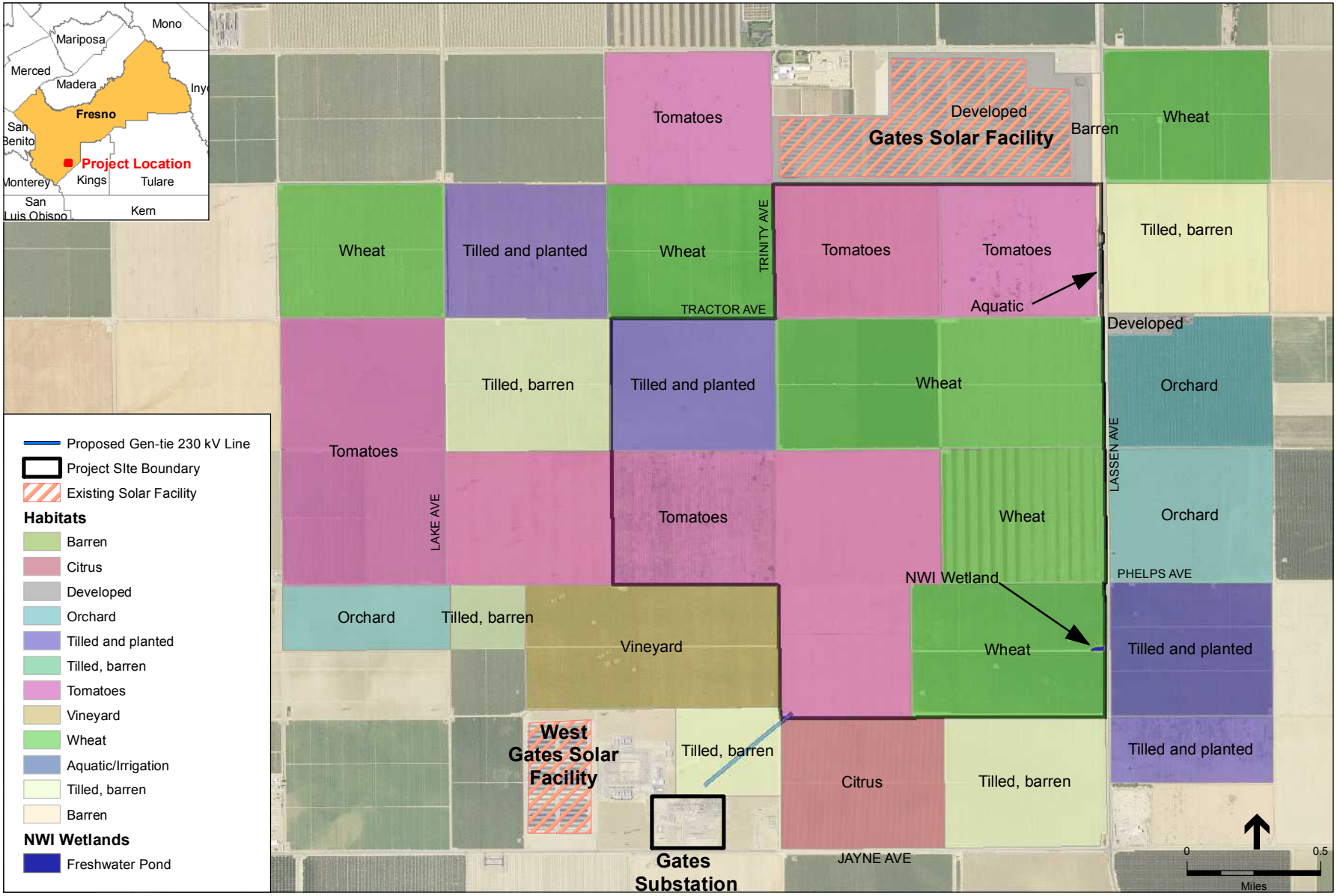
The Project site is currently leased by EC&R Solar Development, LLC for a period of up to 35 years. The land is under the ownership of various Woolf family trusts and entities (**Table 1**).

TABLE 1
SITE OWNERSHIP

Parcel #	Ownership
075-060-15S	G3 Farming Trust
075-060-52S	Woolf Properties
075-070-01S	G3 Farming Trust
075-070-32S	Woolf Family Trust No. 1
075-070-34S	Woolf Family Trust No. 1
075-130-10S	Woolf Family Trust No. 1
075-130-12S	Woolf Family Trust No. 1
075-130-54S	Woolf Family Trust No. 1
075-130-59S	Woolf Family Trust No. 1
075-130-60S	Woolf Family Trust No. 1
075-070-35S	Woolf Family Trust No. 1
075-070-33S	Woolf Family Trust No. 1

SOURCE: Fresno County, 2016.

Land use within the Project site currently consists of actively farmed row crops, including tomatoes and wheat. Irrigation lines and access roads also occur on the Project site (**Figures 2** and **3**). Several power lines border and cross the site, including high-voltage transmission lines.



SOURCE: EC&R Solar Development, LLC, 2016 ; NWI, 2016; ESA

Fifth Standard Solar Project Complex. 120251

Figure 2

Project Site Land Use

3a - View of Project Site from the East

3b - View of Project Site from the North

SOURCE: EC&R Solar Development, LLC

Fifth Standard Solar Project Complex . 120251

Figure 3

Site Photos

3c - View of Project Site from the South

3d - View of Project Site from the West

SOURCE: EC&R Solar Development, LLC

Fifth Standard Solar Project Complex . 120251

Figure 3 (continued)

Site Photos

The site overlies the Westside Groundwater Subbasin, which covers more than 640,000 acres and is located within the San Joaquin Valley Groundwater Basin. There are six wells on the Project site, four of which are active. The site is within Westlands Water District boundaries and receives an allocation of surface water. This allocation is not used to irrigate the site and instead is diverted to almond crops on other land under control of the site owners. The property's existing water rights allocation would not be used for Project purposes.

The Project site is included in the area covered by the Fresno County General Plan (County of Fresno, 2000a). The entire site is zoned AE20, or "Exclusive Agricultural," as designated by the Fresno County Zoning Ordinance (County of Fresno, 2000b). All parcels upon which construction is proposed fall under Williamson Act contracts, and the entire site has a designation of "P," or "Prime Farmland," as provided by the California Farmland Mapping and Monitoring Program (FMMP, 2014) (**Figure 4**). The Applicant is currently preparing cancellation applications for the Williamson Act Contracts on the Project site.

The Federal Emergency Management Agency (FEMA) designates the Project site and surrounding area as within Zone X (FEMA, 2016). Zone X is defined as an area of "moderate flood hazard, usually the area between the limits of the 100-year and 500-year floods." No streams or large bodies of water are present within the Project site. A potential jurisdictional wetland is located linearly in the north-south direction along the northeastern border of the Project site, adjacent to Lassen Avenue.

Soils within the Project site range from excelsior sandy loam, sandy substratum, to westhaven loam and typically include 0 to 2 percent slopes. All of the soils are moderately well-drained or well-drained (USDA, 2016). As the Project area lies in an unincorporated part of Fresno County, it is not within the Fresno County Irrigation District and is not part of a special district.

Project Description

The Project consists of three individual facilities that would be co-located on the site described above. The Fifth Standard Solar Facility is a 150 megawatt (MW) photovoltaic (PV) facility; the Stonecrop Solar Facility is a 20 MW PV facility; and the Blackbriar Energy Storage Facility is a 20 MW energy storage facility. The three facilities would share an onsite Project substation, where power generated/stored at each facility would be increased to match that of the point of interconnection at the adjacent Gates Substation. An existing transmission substation owned by PG&E (Gates Substation) is located approximately 0.4 mile southwest of the Project site at the southwest corner of West Jayne Avenue and South Lake Avenue. An overhead generation tie (gen-tie) line would convey electricity generated at the Project site to the Gates Substation for distribution to customers within the local and regional grid by PG&E. The gen-tie line would require approximately 0.5 mile of 230-kilovolt (kV), single-circuit overhead electric transmission line to connect the Project site to the Gates Substation.

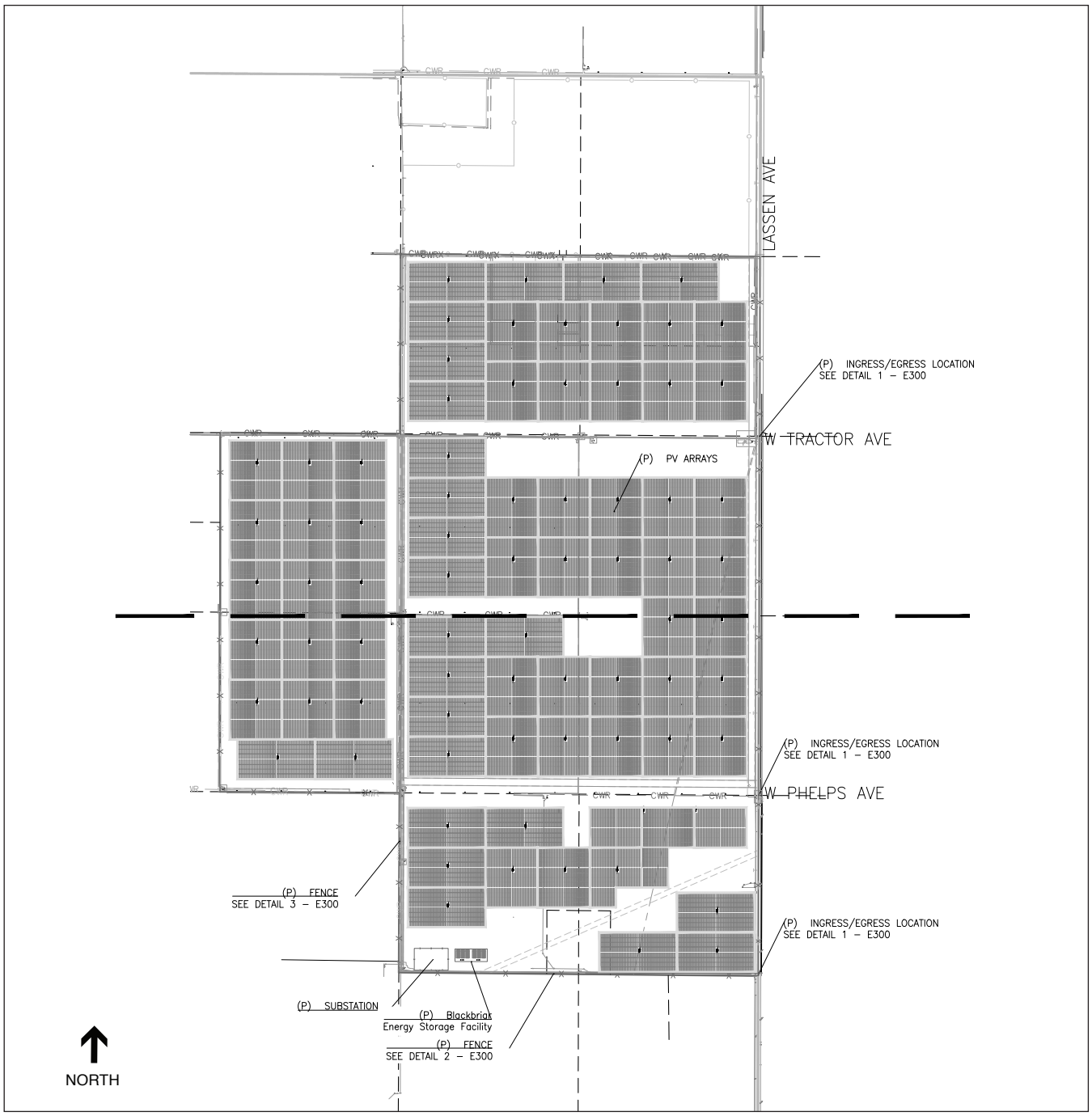
Additional details of Project components are provided below and presented in **Figure 5**.

SOURCE: EC&R Solar Development, LLC, 2016; CDC, 2016

Fifth Standard Solar Project Complex. 120251

Figure 4

Williamson Act Contracted Land In the Project Area

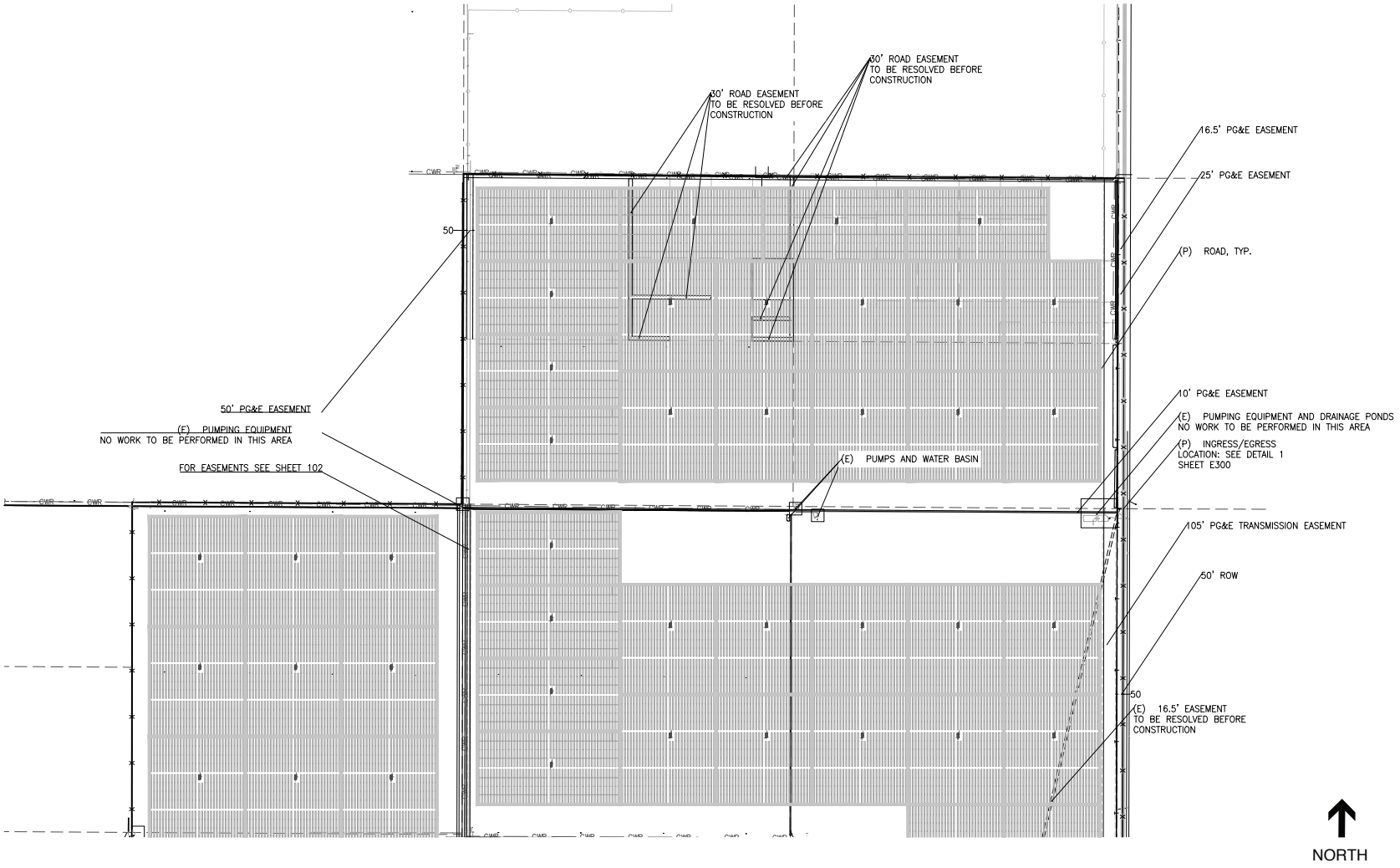


SOURCE: EC&R Solar Development, LLC

Fifth Standard Solar Project Complex . 120251

Figure 5

Plot Plan – Entire Site

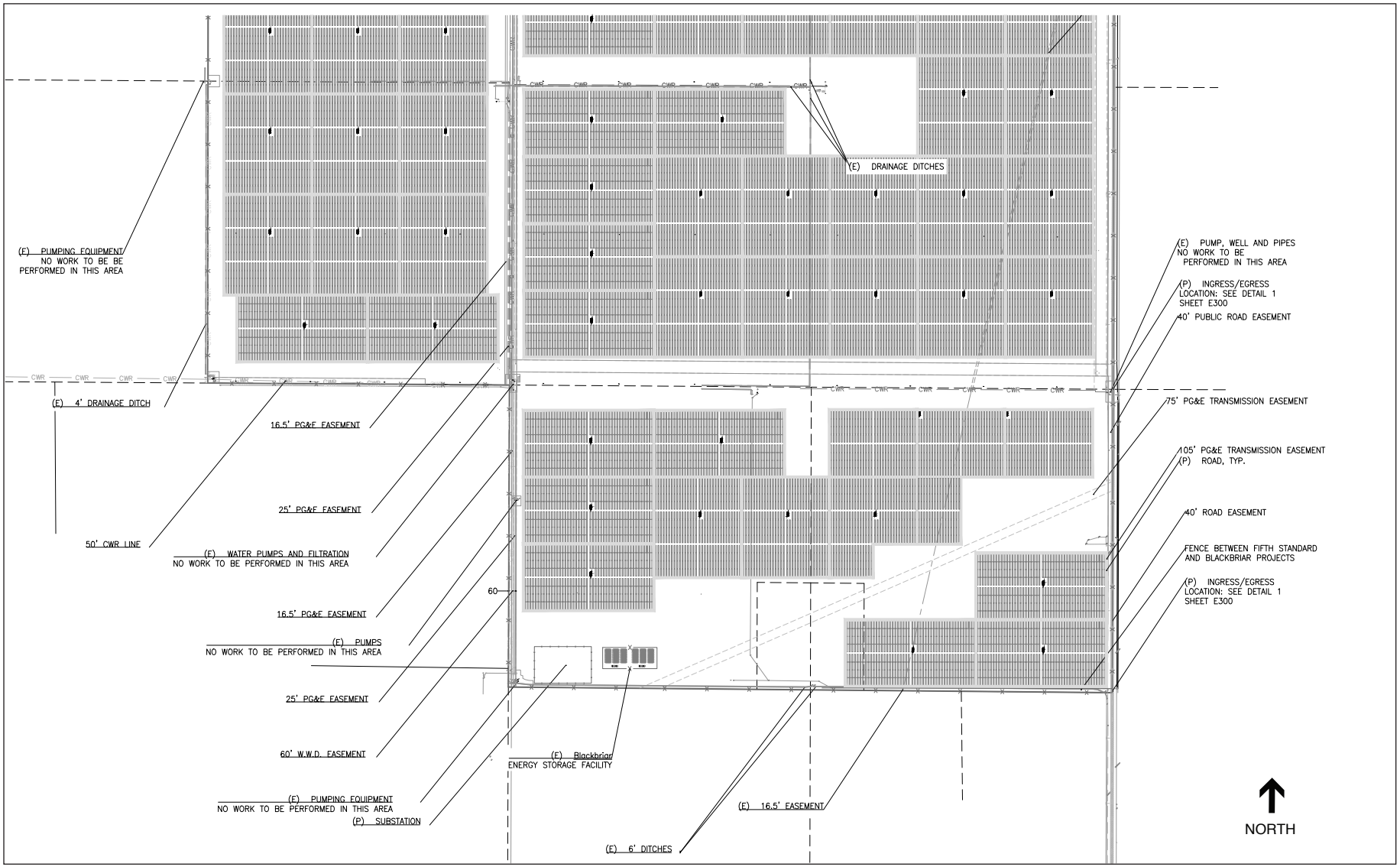


SOURCE: EC&R Solar Development, LLC

Fifth Standard Solar Project Complex . 120251

Figure 5 (continued)

Plot Plan - Northern Half of Site at Larger Scale



SOURCE: EC&R Solar Development, LLC

Fifth Standard Solar Project Complex . 120251

Figure 5 (continued)

Plot Plan - Southern Half of Site at Larger Scale

Major components of the Project include solar PV panels and arrays; a tracker system; an onsite substation, an electrical interconnection system, and an energy storage facility (most likely utilizing batteries). These and other associated Project features are described in more detail below.

Photovoltaic Panels

The Project would primarily consist of PV module arrays that would generate electricity directly from sunlight. Each module, or solar panel, could measure from 44 inches to 75 inches tall and from 22 inches to 44 inches wide, depending upon final module selection. Modules would be mounted onto racking systems and arranged in north-south rows across the site. A single-axis tracking system would move each row of modules throughout the day, tracking the sun from east to west, since electricity generation is maximized when PV modules directly face the sun. Electricity generated at the arrays would be collected and delivered to the Project substation.

The total number of modules or panels would depend on the technology selected, an optimized layout, and a detailed design that takes landscape features, drainage considerations, and maintenance access into account. Thin-film PV module technology or crystalline silicon PV module technology, or both, may be incorporated into the Project.

Manufacture of the PV modules would be completed offsite and transported to the Project site. Although selection of the module has not been finalized, the general characteristics of the PV modules are that they would be covered with dark, high-light-absorbing, low-reflective glass, and would be mounted on a corrosion-resistant metal racking system.

Modular Power Block, Cabling and Connections

The solar panel array would contain individual modular power blocks. Individual PV panels and rows would be electrically connected together in series to carry direct current (DC) electricity. Multiple DC strings would be wired into an aboveground combiner box to merge the strings into a single high-current cable. From the combiner boxes, the cabling would be installed above ground in cable trays and underground approximately 3 feet deep to inverters mounted on small concrete pads distributed across the Project site. The inverters would change the DC output from the combiner boxes to alternating current (AC) electricity. Next, the AC electricity for the modular power block would be increased to medium voltage with a standard “step-up” transformer. The medium voltage cabling would create multiple collection circuits that would carry the electricity from the modular power blocks to the Project substation. The medium voltage collection circuits would be installed underground or on overhead poles to the substation.

The DC cable system would be laid in above-ground metal trays measuring approximately 6 inches by 6 inches running the length of the tracker rows. DC cables would exit the arrays and run in underground trenches from the arrays to inverter skids and a step-up transformer. The inverter skids would be sized and spaced according to final design and engineering requirements, with a typical skid including two to four inverters to serve up to 4 MW. The Project would use 100 to 200 inverters. The skids would be placed on a concrete foundation measuring 30 feet by

10 feet. The top of the equipment would be approximately 10 feet above the ground. There would be one such skid and foundation for each modular power block.

Tracker Unit

Each modular power block is typically comprised of individual tracker units. The tracker units would contain the rows of solar PV panels running in the north-south direction. The tracker units would rotate the rows of solar PV panels from east to west throughout the day, following the sun to maximize exposure to sunlight and electrical output. The rows of each tracker unit would be linked together and rotated in unison by an industrial-grade system controller and drive unit. The tracker units would include seven major components, described below:

Drive Unit. Multiple rows may be rotated with a single drive unit, or each row may be provided with its own drive. In the first scenario, multiple rows of solar PV panels would be linked by a steel drive strut, which would be oriented perpendicular to the axis of rotation. Each row would be connected to the drive strut by a torque arm, which acts as a lever, enabling the drive strut to rotate the rows together as the drive unit moves the drive strut forward and backward. The drive unit typically is mounted at the first row in a tracker unit, and consists of a bi-directional AC motor that rotates the drive strut. The drive unit would be connected to an industrial-grade variable-frequency drive that translates commands from the control computer into AC voltage that applies power to the motor, and to the drive strut and the rows.

In the other tracking system, a motor would be mounted in the middle of each row, and there would be no drive components spanning multiple rows.

Tracker Controller. The tracker controller is a self-contained industrial-grade control computer that would incorporate all of the software needed to operate the system. The controller would include a liquid crystal display (LCD) monitor that displays a combination of calibration parameters and status values, providing field personnel with a user-friendly configuration and diagnostic interface. The LCD would enable field adjustment, calibration, and testing.

PV Panels. The system would incorporate commercially-available Underwriters Laboratory (UL)-listed solar PV panels, as described above. Due to the limited rotation angles and generally flat topography in the area surrounding the Project site, the solar PV panels have no potential for reflecting the sun’s rays upon any ground-based observer offsite. These panels would be protected from impact by tempered glass and would have factory applied ultraviolet- and weather-resistant “quick connect” wire connectors.

Steel Tracking Structure. The steel tracking structure would be able to withstand high-wind conditions, site-specific wind gust and aerodynamic pressure effects, and seismic events, as required by applicable codes. The frame would be elevated to approximately 3 to 7 feet above the ground and would consist of long, horizontal beams atop vertical piles.

DC-AC Inverter. The inverter would change the electrical current from DC, which is produced in the solar cells, to AC, which is delivered to the transmission system.

Combiner Boxes. Combiner boxes would merge the DC module wiring into a single high-current cable.

Data Acquisition System. Integrated with the inverter, this system is made up of multiple components including a data logger and sensors to record AC power output. Other integrated components include equipment to record weather conditions, including ambient temperature measured in degrees Celsius (°C), incoming solar radiation measured in watts per square meter (W/m^2), and wind speed measured in meters per second (m/s). The Data Acquisition System enables system data transfer and performance monitoring, either locally or remotely.

Onsite Substation

The Project would include a single onsite substation, located in the southwest corner of the Project site (Figure 2). The substation dimensions would be approximately 500 feet by 320 feet. The substation would collect the medium voltage circuits that carry power from the Fifth Standard Solar, Stonecrop, and Blackbriar facilities and would contain metering equipment, switchgear, a series of fuses and circuit breakers that act as protective relays, as well as a transformer to step-up the voltage to match the voltage of the local transmission grid.

Electrical Interconnection

The Project would require the construction of a new 230-kV overhead gen-tie line, which would extend from the Project substation at the southwestern corner of the site. APN 075-070-34S of the Project site and PG&E-owned parcel 075-060-45SU share a common border for a distance of approximately 163 feet. EC&R has begun discussions with PG&E regarding this component of the Project. The Project gen-tie would be designed to pass from the Project site to PG&E property at this boundary, thus eliminating the need for additional easements from other private landowners.

Telecommunications

The Project would be designed to employ a Supervisory Control and Data Acquisition (SCADA) system. The SCADA would allow remote monitoring of the Project's operation, as well as remote operations of its critical control components. Access to the Project's SCADA system would be accomplished with wireless and/or hard-wired connections to locally available commercial service providers, i.e., a Local Exchange Carrier.

Meteorological Data Collection System

The Project would include a meteorological data collection system (weather station). Various sensors at the station would measure three different types of solar radiation, wind speed, wind direction, temperature, humidity, and precipitation. Data from each sensor would be collected by the station's data-logger, as well as transmitted to the Project's SCADA system for monitoring and reporting purposes.

A mobile weather station mounted on a small, flatbed trailer would likely be installed during the Project development phase. This mobile version of the station would be replaced by a permanent, ground-mounted version during Project construction.

Energy Storage Facility

Storage systems can assist grid operators in more effectively integrating intermittent renewable resources into the statewide grid and can assist utilities in their efforts to meet energy storage goals mandated by the California Public Utilities Commission. A 20 MW energy storage facility with a four-hour discharge duration would be constructed on the Project site. The storage system would consist of battery or flywheel banks housed in enclosures, as well as buried electrical conduit. The system would be located near the Project substation. Enclosures measuring 40 feet by 8 feet by 8.5 feet high would be installed on concrete pads designed for secondary containment, utilizing up to 5 acres of the Project site. Sixty to 70 enclosures are expected to be required, although more or less may be used, depending on the final technology selected. Transformers and HVAC systems are required and may be located either within or external to the enclosures. Alternatively, one to two buildings (rather than multiple, smaller containers) could be installed to house all of the energy storage components. The Project could use any commercially available battery technology, including but not limited to lithium ion, sodium sulfur, sodium hydride or nickel hydride.

Site Access and Roads

Access roads would be developed for ingress and egress to the Project site, to individual Project components, and between the solar array rows to facilitate installation, maintenance, and cleaning of the solar panels.

Primary access roads, running from the site entrance to the Project substation and to the individual facilities, as well as a perimeter road, are proposed to be graveled. Approximately 4 to 8 inches of Class 2 aggregate base would be added and compacted. The roads providing access to the inverter equipment pads would be 12 feet wide and would be sufficient for California Department of Forest and Fire Protection (CALFIRE) access (Fresno County Fire Protection District has a contract with the CALFIRE Fresno-Kings Unit for the provision of emergency services). The perimeter roads would: (i) provide a fire buffer, (ii) accommodate Project operation and maintenance (O&M) activities, and (iii) also facilitate onsite circulation for emergency vehicles. Perimeter roads would be 12 feet wide.

Additional access roads providing access to PV arrays for O&M activities would be comprised of compacted earth. For these roads, the ground would be grubbed (cleared of vegetation), scarified (loosened up), moisture conditioned, compacted, and graded with a crown in the center and a swale on the side.

Primary access to the Project site would be via Lassen Avenue. The entrance road would be improved to the following standard: 24 feet wide, two 10-foot travel lanes with two 2-foot

shoulders, and an aggregate base surface. During decommissioning of the facility, it is anticipated that the same access roads would be used for removal of the facility components.

Lighting

Motion-sensitive directional lights would be installed to provide security and approach lighting for the substation and control-equipment enclosure or building. Manually controlled lighting would be installed for O&M activities at other Project locations, such as inverter and intermediate transformer locations. All lighting would be shielded and/or directed downward in order to minimize the potential for glare or spillover onto adjacent properties, and would meet applicable rules and code requirements for outdoor lighting. Project lighting would be in use as determined by the motion sensors, security requirements, prudent utility practices, and/or as necessary for O&M activities.

Security and Safety

As necessary for public safety and site security, the Applicant would install a 6- to 8-foot-high fence around the perimeter of the Project site. Landscaping may be installed at key locations to minimize visibility of Project facilities and infrastructure from outside vantage points.

Signage for safety and identification would be posted around the perimeter of the Project site. The Applicant would post all signs required by all jurisdictions with authority. All signage would conform to Fresno County signage requirements.

To ensure appropriate fire safety onsite, the Applicant would coordinate with the California Office of the State Fire Marshall (which is within CALFIRE) and the Fresno County Fire Protection District to provide appropriate PV training to fire responders, as well as to construction, operational, and maintenance staff. The intent of this training would be to familiarize both responders and workers with the codes, regulations, associated hazards, and mitigation processes related to solar power plants. To limit fire risk, maintenance would include the management and removal, as needed, of combustible vegetation on and around the Project site boundary. The Project site’s perimeter roads would also act as fire breaks. The Applicant would coordinate with the Fresno County Fire Protection District in the development of an Emergency Action Plan for the Project site.

Combustible materials within and around the Project boundary, including vegetation, would be actively managed by O&M personnel to minimize fire risks. Management of vegetation, in combination with the onsite, 12-foot-wide access roads would limit paths of any potential onsite fires. The Applicant would coordinate with the Fresno County Fire Protection District during development of an Emergency Action Plan for the site.

Storm Water Protection

As the Project would result in disturbance of an area greater than 1 acre, the Applicant would be required to enroll, under the State Construction General Permit, for the National Pollution

Discharge Elimination System program as there are several potentially-jurisdictional aquatic features located on the eastern fringe of the Project site, including an agricultural pond located immediately adjacent to Lassen Ave. To enroll under this permit, the Applicant would prepare a Storm Water Pollution Prevention Plan (SWPPP) that details Project information; monitoring and reporting procedures; and Best Management Practices (BMPs) (such as dewatering procedures, storm water runoff quality control measures, and concrete waste management, as necessary). The SWPPP must include measures to ensure that all pollutants and their sources are controlled; non-storm water discharges are identified and either eliminated, controlled, or treated; site BMPs are effective and result in the reduction or elimination of pollutants in storm water discharges and authorized non-storm water discharges; and BMPs installed to reduce or eliminate pollutants after construction are completed and maintained. The SWPPP would be based on final engineering design and would include all Project components.

Testing and Energizing

Prior to commencement of commercial operations, commissioning and start-up activities would include testing, calibration, and any necessary troubleshooting, of all substation equipment, inverters, electricity collection systems, energy storage systems, and PV array systems. Initial equipment energization would occur upon completion of successful testing.

Project Construction

Schedule

Construction of the Project facilities would occur over 11 to 12 consecutive months, with an expected start in early 2019 and an anticipated completion by the end of December 2019. Within this timeframe, construction of the three individual facilities would occur according to the following schedule:

- Blackbriar Energy Storage Facility: Construction of Blackbriar is expected to begin in February 2019 and to be complete by June 2019.
- Fifth Standard Solar: Construction of Fifth Standard Solar is expected to begin in April 2019, occur simultaneously with Blackbriar construction for several months, continue beyond the completion of Blackbriar and be complete by December 2019.
- Stonecrop Solar: Construction of Stonecrop would begin after completion of Blackbriar but prior to the completion of Fifth Standard, thus running concurrently with Fifth Standard construction. Stonecrop construction is expected to begin in August 2019 and to be complete at the same time as Fifth Standard, or in December 2019.

Pre-Construction Activities

Pre-construction activities would comprise activities to prepare the Project site for construction, including site surveying, vegetation clearance, and grading. The Project site would be secured

with the installation of chain-link fencing and gates around the site perimeter and staging and laydown areas.

During grading, erosion prevention measures would be implemented—including separation of topsoil, where topsoil is separated and stockpiled separately from subsoil and stabilized—to prevent erosion. When Project construction is complete, stripped subsoil and topsoil would be replaced as required. Other erosion and sediment control measures would include watering for dust control and soil compaction during grading and throughout construction activities. Erosion control designs for the Project would be prepared by a registered Civil Engineer in conformance with industry standards. As described in Section 3.4.12, a SWPPP would be prepared outlining the various BMPs. The erosion control plans would specify the implementation of typical erosion control devices including straw wattles, check dams, fabric blankets, and silt fencing. All erosion control materials would be biodegradable and natural fiber. Grading would be minimized as much as possible. The Project would be constructed to follow the existing topography of the Project site as much as possible to limit erosion potential and maintain existing drainage patterns.

Construction of the Project would require temporary staging and storage areas for materials and equipment during the construction process. Construction laydown and staging areas would be located within the Project site and secured by temporary, free standing chain-link fence for the duration of construction activities. Following construction, laydown and staging areas would be fully restored to as close to pre-construction conditions as possible.

Temporary and permanent site roadways would be graded and compacted prior to road construction. Final site preparation activities would comprise compaction of pad sites/foundations for the substation, inverter, and control room.

Construction Activities

Panels and Trackers

Solar PV panels would be manufactured offsite and shipped to the site ready for installation. Concrete pads for the drive motors would be poured using concrete from an offsite local batch plant, located within approximately 15 miles of the Project site, and electrical equipment for the array would be set in place.

Trackers would be mounted on support posts up to 18 feet long. This installation would occur by vibratory post driving, which involves inserting a steel pipe into the ground using a hydraulic vibratory post driver. The pipe would be approximately 5 inches in diameter and 18 feet in length. The posts would be set so that approximately 4.5 feet of the post would remain above grade. No blasting or rock breaking is anticipated to occur during Project construction. Small truck-mounted cranes or grade-all forklifts would move materials through the Project site and support tracker construction. Array construction would include small all-terrain vehicles to transport materials and workers on access roads and array aisles.

The process and procedures for installation of the racking system and assembly of modules would be driven by final engineering design details, but would generally include these steps:

- Installation of support standards or anchors using a hydraulic/vibratory technique, or assembly of skid system at central location, as required/necessary, for selected racking system
- Installation of any specified tracking system components
- Installation of galvanized metal racking system
- Mounting of PV solar modules to racking system
- Installation of the PV solar module strings' wire harnesses and associated hardware
- Installation of the inverters and equipment control enclosures
- Installation of the DC collector wires from string locations to inverter locations
- Installation of cable from the inverters to the Project substation
- Construction of the substation
- Construction of PG&E Transmission System interconnection facilities
- Installation and interconnection of the communications system
- Connection to local fiber optic and/or telephone network
- Installation of meteorological stations
- Final installation of site roadways upon placement of all necessary underground components

Substation

Construction work within the substation footprint would include site preparation and installation of substructures and electrical equipment. The area would be initially cleared and graded and security fenced for the duration of substation construction. Underground Service Alert would be contacted to mark the locations of existing buried utilities in the vicinity. The substation would be constructed with conventional grading and construction equipment; grading would be minimal as would minor excavation needed to provide concrete footings for the substation equipment. The substation area would be graveled with crushed rock for grounding and employee safety purposes.

Construction Equipment and Personnel

During construction, a variety of equipment and vehicles would be operating on the Project site. **Table 2** provides a list of the type and number of equipment and vehicles expected for construction of each of the Project components. Construction equipment would generally operate between the hours of 7 a.m. and 7 p.m., Monday through Saturday. Nighttime and weekend construction work is not expected to be required, but may occur on occasion, depending on schedule considerations.

TABLE 2
CONSTRUCTION PHASING AND
CONSTRUCTION-RELATED EMPLOYMENT

Construction Element	Construction Phase				
	Site Preparation	Grading/ Excavation	Drainage/Utilities/ Sub-Grade	Construction	Paving
Maximum Number of Workers	50	50	100	200	20
Length of Phase (work days)	12	31	31	310	22

Construction phases of the Project are expected to overlap, and the number of construction workers on site expected to range between 20 and 300 workers per day, with the peak number of workers onsite during months 8 and 9. Workers would commute to and from the Project site on a daily basis, at an average round-trip distance of 30 miles. Local labor would be utilized to the maximum extent practicable.

TABLE 3
ON-SITE EQUIPMENT AND VEHICLE USE BY CONSTRUCTION PHASE

Equipment	Estimated Usage		
	Units	Hours/Day	Total Days
Phase 1: Site Preparation			
Tractors/Loaders/Backhoes	4	8	12
Plate Compactors	2	8	12
Crawler Tractors	2	8	12
Dumpers/Tenders	5	8	12
Forklifts	2	8	12
Generator Sets	4	8	12
Graders	2	8	12
Scraper	2	8	12
Skid Steer Loaders	2	8	12
Phase 2: Grading/Excavation			
Tractors/Loaders/Backhoes	4	8	31
Plate Compactors	2	8	31
Crawler Tractors	2	8	31
Dumpers/Tenders	5	8	31
Forklifts	2	8	31
Generator Sets	4	8	31
Graders	2	8	31
Rollers	2	8	31
Scraper	2	8	31
Skid Steer Loaders	2	8	31
Phase 3: Drainage/Utilities/Sub-Grade			
Tractors/Loaders/Backhoes	4	8	31
Plate Compactors	2	8	31
Crawler Tractors	2	8	31

TABLE 3 (Continued)
ON-SITE EQUIPMENT AND VEHICLE USE BY CONSTRUCTION PHASE

Equipment	Estimated Usage		
	Units	**Hours/Day**	**Total Days**
Phase 3: Drainage/Utilities/Sub-Grade (cont.)			
Dumpers/Tenders	5	8	31
Forklifts	2	8	31
Generator Sets	4	8	31
Graders	2	8	31
Scraper	2	8	31
Skid Steer Loaders	2	8	31
Phase 4: Construction			
Equipment	**Estimated Usage**		
	Units	**Hours/Day**	**Total Days**
Tractors/Loaders/Backhoes	7	8	310
Bore/Drill Rigs	10	8	310
Cement and Mortar Mixers	10	8	310
Concrete/Industrial Saws	3	4	310
Plate Compactors	1	8	310
Cranes	1	8	310
Dumpers/Tenders	5	8	310
Excavators	2	8	310
Forklifts	5	8	310
Generator Sets	4	8	310
Pavers	1	8	310
Paving Equipment	1	8	310
Rollers	1	8	310
Skid Steer Loaders	2	8	310
Trenchers	10	8	310
Phase 5: Paving			
Rollers	1	8	22

The majority of the labor force would come from nearby communities in Fresno County and Kings County. Parking for the construction workers would be in designated areas on the Project site. Carpooling for construction workers would be encouraged to reduce vehicle trips.

Traffic and Deliveries

Project construction traffic would primarily include the delivery of construction equipment, vehicles and materials, and daily construction worker trips. A majority of the equipment (e.g., solar PV panels, inverters, tracker steel, transmission poles, substation circuit breakers, and substation steel) would be delivered to the site in standard widths and lengths by trucks, vans or

covered flatbed trailers. Substation equipment, inverter enclosures, and cranes would be delivered to the Project site on wide-load trailers. These trailers would require pilot cars and are expected to make up to two round trips during their installation period. The Applicant would facilitate materials delivery during off-peak traffic hours, and would comply with all California Department of Transportation permitting requirements if these loads are oversize.

Solid and Liquid Waste

During construction, the Project would involve the transport of general construction materials (e.g., concrete, aggregate, wood, metal, and fuel), as well as the materials necessary to construct the proposed PV and battery storage systems. Solid waste generated during construction would include debris such as concrete, wood, brick, glass, plastics, scrap metal, and similar material. Construction waste that is generated at the Project site would be sorted to separate recyclable and non-recyclable materials. It would be stored in dumpsters that would be serviced by a licensed solid waste hauler in the county. Non-hazardous construction debris that would be generated would be disposed of in local landfills in accordance with applicable regulations. Soils from drilling, trenching, or excavation would be screened and separated for use as backfill at the site of origin to the maximum extent possible.

A construction waste recycling program would be implemented, with the objective of recycling at least 50 percent of the Project waste (by weight). All solid construction wastes would be disposed of or recycled by qualified service providers. In order to accommodate directing of construction materials to proper end-point destinations, contractors and workers would be educated on waste sorting, appropriate recycling storage areas, and measures to reduce landfill waste.

Liquid (sanitary) wastes generated during Project construction are expected to range from 13 to 20 gallons per worker. Sanitary wastes would be contained in portable facilities, collected at least weekly, and disposed of at an offsite disposal or treatment facility. An onsite sewage system would not be constructed to treat sanitary wastes during construction.

Any hazardous wastes, in liquid or solid form, would be removed from the site by a licensed hazardous waste recycling or disposal firm.

Water Requirements and Supply

During Project construction, the primary use of water would be for dust control. Water would also be needed to moisture condition the soils for proper compaction at roads and foundations and for concrete mixing. During construction, especially during any grading activities, it is anticipated that up to 50,000 gallons of water would be needed on a daily basis. The total water volume used during construction may be up to 300 acre-feet.

The Project site currently has six wells, of which four are active. No new wells would be constructed as part of the Project. Construction water would be acquired from existing onsite wells.

Project Operation

Schedule

The solar modules at the site would operate during daylight hours seven days per week, 365 days per year. The energy storage facility could operate at any hour, but would typically operate no more than 4 hours at a time. The anticipated life of the Project would be 35 years.

Operations and Maintenance Activities

The plant manager and maintenance staff would perform inspections, covering each portion of the PV arrays, no less than once per month. Such inspections would be visual and at ground-level. Monthly visual inspections and annual (minimum) preventive maintenance would be performed. In accordance with Occupational Safety and Health Administration safety regulations, at least two qualified personnel would be present during all energized electrical maintenance activities at the facility. The plant manager and one technician would be onsite when such activities are required. During normal business hours when the plant manager and maintenance staff would be onsite, they would monitor the Project site to deter theft and vandalism. During all other times, offsite security personnel would monitor the Project site and provide rapid response to any incidents; visits to the site for emergency purposes are expected to occur infrequently, i.e. only a few times per year. Panel washing crews would conduct panel washing two to four times per year (as described below).

The proposed facility control and monitoring system would have two primary components: an onsite SCADA system and the accompanying sensor network. The onsite SCADA system would offer near real-time readings of the monitored devices, as well as control capabilities for the devices where applicable. Offsite monitoring/data trending systems would collect historical data for remote monitoring and analysis. The plant manager would use both onsite (local) and offsite (remote) O&M personnel to monitor the facility. Offsite personnel would be based at an existing facility, most likely in Fresno County but potentially elsewhere in California.

Local O&M personnel would use the local SCADA and monitoring system to monitor operation and control at the Project facilities. Personnel at a remote operations center would likely provide continuous monitoring coverage of the Project facilities and would respond to real-time alerts and system upsets using advanced monitoring applications. Panel washing would occur approximately two to three times per year, as needed, to clean the active surface of solar panels to optimize transmission of solar light and energy production.

The Applicant would provide landscape and related site maintenance throughout the life of the Project. This would include plant and landscape maintenance, replacement of trees or shrubs as needed, management of groundcover under the arrays, and appropriate disposal of any organic and inorganic materials used in the maintenance of the property. Non-hazardous solid waste would be collected for disposal by a licensed waste hauler and disposed of at municipal county landfills.

Equipment and Personnel

The full-time offsite staff for the Project is expected to consist of 1 site manager, 4 technicians, and 6 security personnel. Additional support personnel would be employed as needed. Occasionally, workers would be present at the Project site to undertake panel washing. Typical maintenance would be expected to require up to four full-time equivalent employees for panel washing. This would occur mainly during the summer months if winter rainfall is sufficient to wash the panels clean such that only a single cleaning would be required during the summer. If a winter is dry or soiling is greater than expected, more washing may be necessary with correspondingly higher staffing requirements.

Site Security

The Project site would be securely fenced along all perimeters with specified points of ingress and egress. In addition to the installation of a 6 to 8-foot chain-link galvanized metal fence topped with standard three-strand barbed wire, access gates to the Project site would remain locked when not in use. Offsite security personnel may be dispatched during nighttime hours or be onsite depending on security risks and operating needs.

The perimeter fence would be designed to allow ongoing movement of wildlife across the Project site. The bottom of the fence would be 5 inches above the ground on average along the entire perimeter, as measured from the top of the ground to the highest point of the bottom of the fence. Fence posts would be drilled and grouted, or driven pneumatically, depending upon site-specific soil characteristics. All fence posts will be capped to prevent the entrapment of birds and other wildlife. Final design specifications for the fence would be determined during detailed Project engineering. Vehicle access gates would be installed as necessary, with the gates to remain locked when not in use.

Security or operations personnel would be available for dispatch to the Project site 24 hours per day, 7 days a week.

Solid and Liquid Wastes

Operation and maintenance of the Project is not expected to generate hazardous waste on a recurring basis. The transformers proposed to be located at the Project substation would use mineral oil for cooling purposes, and certain battery technologies may include materials considered to be hazardous. Disposal of these materials, if required, would occur in accordance with applicable regulations. During normal operation, PV panels, batteries, and inverters would produce no waste.

Nonhazardous solid waste generated during operations would consist of paper, wood, plastic, cardboard, deactivated equipment and parts, defective or broken electrical materials, empty non-hazardous containers, and other miscellaneous solid wastes. Solid waste would be removed on a regular basis by the operator.

At the end of the Project life, the PV panels would be evaluated to determine their value in a secondary market. If not resold or repurposed, they would be recycled. The majority of the remaining Project components would be recycled. Equipment, such as drive controllers, inverters, transformers, and switchgear, can be either re-used or their components recycled. Poured concrete pads would be removed and recycled or reused as clean fill.

Water Requirements

During the life of the Project, the panels would be washed approximately two to three times per year to improve power production. Approximately 4 to 10 acre-feet per year of water would be needed for this use. No wastewater would be generated during panel washing because the water used would be absorbed into the soil or would evaporate. Water would also be consumed for dust mitigation if needed. In total, expected annual water consumption during operation would be less than 30 acre-feet per year. This consumption is compared to the roughly 3,000-4000 acre-feet for the same footprint of farmland for agricultural uses (Hanson, 2016). Similar to construction, water for operation would likely be obtained through existing onsite wells but could also be obtained from off-site sources if needed.

Decommissioning and Site Reclamation

When the Project ceases operation, the facilities would be decommissioned and dismantled and the Project site restored to a condition suitable for agricultural use. Decommissioning of the Project site would take approximately 12 months and would comprises removal of above-ground and below-ground structures; and site reclamation, including restoration of topsoil, revegetation, and seeding. Temporary erosion and sedimentation control BMPs would be implemented during the decommissioning phase of the Project. Decommissioning activities would consist of:

- Dismantling and removal of all above-ground equipment (solar panels, tracker units, transformers, substation, enclosures, etc.);
- Excavation and removal of all below-ground cabling;
- Removal of posts;
- Removal of roads;
- Break-up and removal of concrete pads and foundations;
- Scarification of compacted areas and re-grading of the Project site to pre-Project conditions.

Decommissioning of the Project would require similar water use as construction, due to water needs for dust control. Following decommissioning, the Project site would be returned to agricultural-ready use, and would thus require similar water use as existing conditions. Post-Project, it is expected that the Project site would continue in active agricultural use, which is the same as its pre-Project use, and the same as current use of adjacent parcels. To help with post-construction dust control, a re-vegetation plan would be developed and implemented to repair

temporary disturbance from installation activities, and to be compatible with long-term site vegetation management.

In 2011, the Fresno County Board of Supervisors passed a new information requirement for Conditional Use Permits for solar generation facilities that involve agricultural lands. The Exhibit "A" Solar Facility Guidelines require discussion of nine topic areas, including the preparation of a Site Reclamation Plan to address issues of when and if the facility has reached its useful life and is either closed or decommissioned. Appendix C of this Conditional Use Permit Application addresses the requirements of the Fresno County Solar Guidelines.

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Draft

EC&R SOLAR DEVELOPMENT, LLC
FIFTH STANDARD SOLAR PROJECT COMPLEX

Fresno County, CALIFORNIA
Reclamation Plan

Prepared for
EC&R Solar Development, LLC

September 2016

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OUR COMMITMENT TO SUSTAINABILITY | ESA helps a variety of public and private sector clients plan and prepare for climate change and emerging regulations that limit GHG emissions. ESA is a registered assessor with the California Climate Action Registry, a Climate Leader, and founding reporter for the Climate Registry. ESA is also a corporate member of the U.S. Green Building Council and the Business Council on Climate Change (BC3). Internally, ESA has adopted a Sustainability Vision and Policy Statement and a plan to reduce waste and energy within our operations.

TABLE OF CONTENTS

Fifth Standard Solar Project Complex Reclamation Plan

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RECLAMATION PLAN

In 2011, Fresno County approved specific requirements for site reclamation following development and decommissioning of solar facilities. In order to comply with these requirements, EC&R Solar Development, LLC has prepared this Reclamation Plan to support its Initial Study and unclassified Conditional Use Permit (CUP) Application for the Fifth Standard Solar Project Complex. This plan provides all information required under Fresno County's Reclamation Plan guidance, including details of site use and ownership, reclamation process and timeline and engineering cost estimate.

1.0 Current Site Use

Description of present use of site

The approximately 1,588-acre Project site is located 1.5 miles south of Huron, California, in an unincorporated area of Fresno County. Lassen Avenue (California State Route 269) borders the eastern side of the site and is the only paved road in the immediate vicinity of the site. Trinity Avenue, Tractor Avenue, and Phelps Avenue intersect the site, but are not improved roads. Other nearby communities include Avenal (10 miles south), Ora (11 miles west), Kettleman City (12 miles southeast), and Coalinga (13 miles west).

Surrounding land uses include farmland, the Pacific Gas and Electric Company's (PG&E's) Gates Substation and two nearby solar generating facilities (Gates Solar and West Gates Solar). The Gates Substation is located 0.4 mile southwest of the Project site. The existing West Gates Solar facility is adjacent to the Gates Substation, 0.5 mile southeast of the site. The Gates Solar facility is located to the north and immediately adjacent to the Project site. Interstate 5 (I-5) is located approximately 2 miles west of the site. The Pleasant Valley Ecological Reserve is located across I-5, 6 miles west of the site (CDFW, 2016). New Coalinga Municipal Airport is located approximately 9 miles to the west of the site.

The Project site is located in an area of predominantly agricultural land. It is zoned AE20 and is designated "Exclusive Agricultural" under the Fresno County General Plan. Land use within the Project site currently consists of actively farmed row crops, including tomatoes and wheat. Irrigation lines and access roads are also present on the Project site. Several power lines border and cross the site, including high-voltage transmission lines. There are six existing wells on the site, four of which are active.

2.0 Proposed Use of the Site

Describe the proposed alternate use of the land (all equipment to be installed above ground and underground, structures, fencing etc.)

EC&R Solar Development, LLC (EC&R, the Applicant) is proposing to construct, operate, maintain, and ultimately to decommission the Fifth Standard Solar Project Complex on an approximately 1,588-acre site in unincorporated Fresno County (the Project). The Project site is located 2 miles east of I-5, 1.5 miles south of Huron, and approximately 13 miles east of Coalinga. The Project comprises three facilities:

- Fifth Standard Solar Facility: a 150 megawatt (MW) solar photovoltaic (PV) energy generation facility that is anticipated to require up to 1,400 acres of the site.
- Stonecrop Solar Facility: a 20 MW PV facility that will be located adjacent to Fifth Standard Solar and will require less than 200 acres of the site.
- Blackbriar Battery Storage Facility: a 20 MW battery storage facility that will be located adjacent to Fifth Standard Solar and Stonecrop, and will utilize less than 5 acres of the site.

These three facilities will share an onsite substation, where power generated/stored at each facility will be increased to match that of the point of interconnection at the adjacent Gates Substation. The facility will share a single generation inter-tie ("gen-tie") line, which will connect the Project substation to the Gates Substation. The gen-tie line would require approximately 0.5 mile of 230-kV, single-circuit overhead electric transmission line to connect the Project site to the Gates Substation. Major components of the Project include solar PV panels and arrays; a tracker system; an onsite substation, an electrical interconnection system, and an energy storage facility (most likely utilizing batteries or flywheel banks housed in enclosures).

3.0 Duration of the Proposed Use

Duration of the alternate use of the property (specify termination date)

The Project is expected to have a lifespan of 35 years. At that time, the facilities would be decommissioned and dismantled and the site restored to an agricultural use-ready condition in accordance with all applicable codes and regulations.

Assuming that the Project is operational in late 2019, the anticipated termination date would be sometime in 2054, with decommissioning activities continuing into 2055.

4.0 Current and Future Ownership

Address ownership of the property (lease or sale)

EC&R has finalized lease negotiations with the current landowners (see **Table 1**) and has have site control for a period up to 35 years.

TABLE 1
SITE OWNERSHIP

Parcel #	Williamson Act Contracts Number	Ownership
075-060-15S	AP 365	G3 Farming Trust
075-060-52S	AP 367	Woolf Properties
075-070-01S	AP 2227	G3 Farming Trust
075-070-32S	AP 2227	Woolf Family Trust No. 1
075-070-34S	AP 2227	Woolf Family Trust No. 1
075-130-12S	AP 1809	Woolf Family Trust No. 1
075-130-54S	AP 5150	Woolf Family Trust No. 1
075-130-59S	AP 365	Woolf Family Trust No. 1
075-130-60S	AP 365	Woolf Family Trust No. 1
075-070-35S	AP 2799	Woolf Family Trust No. 1
075-070-33S	AP 2799	Woolf Family Trust No. 1

SOURCE: Fresno County, 2016.

5.0 Reclamation Activities

Describe how the subject property will be reclaimed to its previous agricultural condition, specifically:

A) Timeline for completion of reclamation after solar facility has termed

The Project has an expected lifetime of 35 years, after which time it would be decommissioned and the site restored to a condition suitable for agricultural use. The reclamation process will include the disassembly and removal, or demolition (if applicable), of all above- and below-ground infrastructure, including: solar panels, inverters, transformers, battery containers, miscellaneous substation equipment, mounting structures, control building, fencing, concrete foundations and electrical cables from the facility site. The reclamation activities will be conducted following expiration of all power purchase agreements. Decommissioning and site restoration would take approximately 12 months.

B) Handling of any hazardous chemicals/materials to be removed

During decommissioning, all electrical equipment will be disassembled and removed for re-use or recycling. During Project operation and maintenance, no hazardous materials are anticipated to be necessary to be handled, stored, transported, used, or disposed of on the Project site. Therefore, the handling and removal of hazardous chemicals/materials will not be a significant component of the reclamation process. Any hazardous chemicals that are brought onto the Project site will be handled in compliance with all regulations and standards. All necessary documentation (such as a Hazardous Materials Business Plan, Risk Management Plan, or Spill Prevention Control and

Countermeasures Plan, if required) will be completed and submitted to the County in the required timeframe and maintained at the facility site in accordance with applicable rules and regulations.

C) Removal of all equipment, structures, buildings and improvements at and above grade,

Decommissioning includes removal of above-ground and below-ground structures; and site reclamation, including restoration of topsoil, revegetation, and seeding to reduce erosion. Temporary erosion and sedimentation control Best Management Practices (BMPs) would be implemented during the decommissioning phase of the Project. Decommissioning activities would consist of:

- Disconnecting the facility from the utility power grid;
- Dismantling and removal of all above ground equipment and structures (solar panels, tracker units, cables, solar panel module support steel and tracker steel components, battery containers, transformers and substation and gen-tie line;
- Removal of switchgear, including: disconnecting switches, circuit breakers, relays, etc.;
- Removal of posts and fencing;
- Removal of roads (both graveled and paved, including the aggregate base);
- Break-up and removal of concrete pads and foundations; and
- Scarification of compacted areas to return affected areas to agricultural use-ready conditions. It is not anticipated that grading would be required.

D) Removal of any below grade foundations

The Project will require limited construction of below-grade foundations to provide support for the inverters, transformer and substation equipment. Assuming a subsequent allowable and desirable use for the foundations is not identified, all below-grade concrete foundations will be demolished, unearthed and removed from the facility site. Appropriate civil construction work (such as back-filling) will follow the extraction of the below-grade concrete foundations in order to achieve reclamation of the land for agricultural use.

E) Removal of any below grade infrastructure (cables/lines, etc.) that are no longer deemed necessary by the local public utility company

The Project will require installation of numerous underground electrical cables and associated infrastructure needed for facility operation. Depending on final design, these underground cables will be installed in either PVC or rigid steel conduits and/or direct-bury as allowed by code. The reclamation process shall include the removal of all underground conduits and cables, with each material to be sorted and routed for recycling as appropriate. Once cables and conduits are removed all exposed trenches will be back-filled.

F) Detail any grading necessary to return the site to original grade

The Project site is generally level and will not require grading prior to construction, and therefore will require limited or no grading following decommissioning.

G) Types of crops to be planted

Following decommissioning, the Project site will be returned to a condition suitable for agricultural use. The type of crops that could be planted will be at the discretion of the landowner and depend on factors such as the availability of water for irrigation and general conditions in the agricultural sector at the time. If the site is not returned to agricultural use after the completion of Project decommissioning, it will be reseeded with a native vegetation mix to reduce water- and windborne erosion and runoff. This would be undertaken as the final step in the decommissioning process. To help with post-construction dust control, a re-vegetation plan will be developed and implemented to repair temporary disturbance from installation activities, and to be compatible with long-term site vegetation management. If irrigation is required, this will be obtained from either onsite wells or an external source.

H) Irrigation system details to be used (existing well, pumps, etc. should remain throughout the solar facility use

There are six existing wells on the site, four of which are active and adequate for use during construction of the Project. Water necessary for operation and maintenance of the Project will be minimal and is expected to be supplied from groundwater, although other sources may be used. Existing wells and associated agriculture-related irrigation infrastructure will be left in situ for the life of the Project.

At the end of the Project life, the PV panels would be evaluated to determine their value in a secondary market. If not resold or repurposed, they would be recycled. The majority of the remaining Project components would be recycled. Equipment, such as drive controllers, inverters, transformers, and switchgear, can be either re-used or their components recycled. Poured concrete pads would be removed and recycled or reused as clean fill.

6.0 Site Plan

Preliminary site plans are included with the CUP Application for the Project (see Operational Statement, Figure 5). A final reclamation site plan will be submitted upon final selection of equipment and completion of engineering design, and prior to issuance of any requisite grading or building permits.

7.0 Decommissioning Cost Estimate

An engineering cost estimate of reclaiming the site to its previous agricultural condition shall be submitted for review and approval

Estimated costs associated with returning the Project site to a condition suitable for agricultural use are provided in Table 2.

TABLE 2
FIFTH STANDARD SOLAR PROJECT COMPLEX DECOMMISSIONING COST ESTIMATE

	Description	Total Cost
1	Demolition of Arrays	$1,118,354
2	Demolition of Electric Cables	$596,653
3	Demolition of Substation	$137,096
4	Demolition of Civil & Structures	$59,923
5	Trucking Costs	$401,100
6	Disposal Costs	$81,068
8	Site Repair & Restoration	$612,992
9	Supervision Costs	$475,450
	Total Decommissioning Cost	**$3,482,637**

SOURCE: EC&R, 2016

8.0 Financial Assurances

Financial assurances equal to the cost of reclaiming the land to its previous agricultural condition shall be submitted to ensure the reclamation is performed according to the approved plan. Financial assurances shall be made to the County of Fresno and may take the form of cash, letter of credit, or bond that complies with Section 66499 of the California Government Code et. seq.

EC&R Solar Development, LLC will provide necessary financial assurances upon completion of final site plans and updating of the reclamation plan's engineering cost estimate. Posting of the assurances is anticipated prior to issuance of the building permit(s), and will be provided as either a letter of credit or a bond that complies with Section 66499 of the California Government Code.

9.0 Owner Notification

Evidence that all owners of record have been notified of the proposed reclamation plan

Please see Appendix A for details of owner notification.

APPENDIX A

Notification of Reclamation Plan to Owners of Record

WOOLF FARMING
AND PROCESSING

7041 N. VAN NESS BLVD.
FRESNO, CA 93711
OFFICE: 559-226-9292
FAX: 559-226-9323
WWW.WOOLFFARMING.COM

August 26, 2016

Mr. Derek Chambers
County of Fresno
Department of Public Works and Planning
Development Services Division
2220 Tulare Street, Sixth Floor
Fresno, California 93721

SUBJECT: Receipt of Reclamation Plan for Fifth Standard Solar Project Complex

Dear Mr. Chambers:

G3 Farming Trust is the owner of parcels 075-060-15S and 075-070-01S. Woolf Properties owns parcel 075-060-52S-9, and Woolf Family Trust No. 1 is the owner of the following parcels:

- APN 075-130-60S
- APN 075-130-12S
- APN 075-130-10S
- APN 075-130-59S
- APN 075-130-54S
- APN 075-070-32S
- APN 075-070-33S
- APN 075-070-34S
- APN 075-070-35S

By signing this letter, we acknowledge receipt of the Reclamation Plan prepared for the Fifth Standard Solar Project Complex.

Sincerely,

OWNER:

G3 Farming Trust, formerly titled Stuart Farming
[for APNs 075-060-15S & 075-070-01S]

Name: Stuart Woolf

Title: _____

OWNER:

Daryl Barsoom, Jason Pucheu, and Paul Fanelli, as Trustees of the Woolf Family Trust No. 1
[for APNs 075-070-32S & 075-070-34S, 075-130-10S-1, 075-130-12S-3, 075-130-54S, 075-130-59S, 075-130-60S, 075-070-33, and 075-070-35]

Daryl Barsoom

Name: Daryl Barsoom

Title: Trustee

OWNER:

Daryl Barsoom, Jason Pucheu, and Paul Fanelli, as Trustees of the Woolf Family Trust No. 1
[for APNs 075-070-32S & 075-070-34S, 075-130-10S-1, 075-130-12S-3, 075-130-54S, 075-130-59S, 075-130-60S, 075-070-33 and 075-070-35]

Name: Jason Pucheu

Title: Trustee

OWNER:

Daryl Barsoom, Jason Pucheu, and Paul Fanelli, as Trustees of the Woolf Family Trust No. 1
[for APNs 075-070-32S & 075-070-34S, 075-130-10S-1, 075-130-12S-3, 075-130-54S, 075-130-59S, 075-130-60S, 075-070-33 and 075-070-35]

Name: Paul Fanelli

Title: TRUSTEE

OWNER:

G3 Farming Trust, formerly titled Stuart Farming
[for APNs 075-060-15S & 075-070-01S]

Name: Michael Woolf

Title: _____

OWNER:

G3 Farming Trust, formerly titled Stuart Farming
[for APNs 075-060-15S & 075-070-01S]

Name: Christopher Woolf

Title: _____

OWNER:

Woolf Properties, a California Corporation
[for APN 075-060-52S-9]

Name: Stuart Woolf

Title: _____

3.0 STATEMENT OF OVERRIDING CONSIDERATIONS

3.1 INTRODUCTION

This Statement of Overriding Considerations has been prepared in accordance with CEQA (PRC Section 21000 et seq.) and the CEQA Guidelines (CCR Title 14 Section 15000 et seq.).

3.2 STATEMENT OF OVERRIDING CONSIDERATIONS

As set forth in the preceding sections, the County's approval of the project would result in significant adverse environmental effects that cannot be avoided even with the adoption of all feasible mitigation measures; and there are no feasible alternatives that would mitigate or substantially lessen the impacts. However, despite the occurrence of these effects, the economic, social, and other benefits that the project would provide would render the significant effects acceptable.

Significant and Unavoidable Impacts

As discussed in the EIR, the project would result in the following potentially significant and unavoidable impacts, even with implementation of all feasible mitigation measures:

Impact AG-1 The proposed project would convert Prime, Unique, or Farmland of Statewide Importance to a non-agricultural use. The project would convert 1,600 acres of Prime Farmland to non-agricultural use. Despite implementation of Mitigation Measure (MM) AG-1 (Reclamation Plan), which would return the land to agricultural uses at the end of the solar lease, the site may not return to pre-project levels without the surface water allocation and if the groundwater quality and supply are diminished over the extended period that the site is in non-agricultural use. The conversion of Prime Farmland to non-agricultural use would be considered significant; therefore, the impact is determined to be significant and unavoidable.

Impact AG-2 The proposed project would conflict with existing zoning for agricultural use or a Williamson Act contract. With the exception of a 1.25-acre parcel located in the interior of the site, the entire site is restricted by Williamson Act contracts. The proposed project would cancel the Williamson Act contracts on almost 1,600 acres. There is no mitigation available to address the cancellation of the Williamson Act contracts; therefore, the impact remains significant and unavoidable.

Impact AG-3 The proposed project would involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use. Given the increased importance of renewable energy in California, other landowners may determine that the conversion of some of their land holdings to non-agricultural use is economically feasible; thus, indirect conversion of offsite farmland could potentially occur. MM AG-1 would require the implementation of a reclamation plan to return of the project site to potential agricultural use but would not address the precedent of a large Prime Farmland

conversion to non-agricultural use. There are no mitigation measures that would reduce this impact. The impact would remain significant and unavoidable.

Impact LUP-1 The proposed project would cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. The proposed project would not be consistent with applicable goals and policies of the General Plan aimed at preservation of productive farmland in the County. Despite implementation of MM AG-1 (Reclamation Plan), which would return the land to agricultural uses at the end of the solar lease, the site may not return to pre-project levels without the surface water allocation and if the groundwater quality and supply are diminished over the extended period that the site is in non-agricultural use. The impact would be significant and unavoidable.

Findings

The County has considered all potentially feasible mitigation measures to substantially lessen or avoid the project's significant and unavoidable impacts. Where feasible, mitigation measures would be adopted as part of the project. The imposition of these measures would reduce the identified impacts, but not to a less than significant level.

There are no feasible alternatives that would reduce the above significant and unavoidable impacts to a less than significant level.

The project's impacts discussed above therefore remain significant and unavoidable.

Overriding Considerations

The project and its benefits outweigh its unavoidable significant impacts. The following statement identifies the specific reasons why the benefits of the project, if approved, outweigh its unavoidable significant impacts. Any one of these reasons is sufficient to justify approval of the project. The substantial evidence supporting the various benefits can be found in the preceding findings, which are incorporated by reference into this Statement of Overriding Considerations, and in the documents found in the Record of Proceedings as defined in the Findings of Fact.

The project provides an opportunity for the County to diversify job opportunities in the local economy, increase revenues, and address global climate change.

- Development and operation of the project is forecasted to provide a significant contribution to the County in the form of job creation and investment in the local economy. The project is anticipated to provide up to 300 construction jobs during construction and approximately 11 (full- and part-time) positions during operations. Other potential economic benefits to the County and its residents include tax revenues and increased spending in the community during construction and operations. Specifically, it is estimated that the project could provide more than $20 million in payroll during construction.

- Local procurement of concrete, gravel, fencing, rental equipment, fuel, small tools, and other materials and services during construction could provide a value of more than $5 million.
- Approximately $4 million in sales and use taxes would be provided with the project.
- Development of the project would generate clean energy to power approximately 52,000 homes annually[1], offsetting approximately 96,168 metric tons of carbon dioxide equivalents per year.[2]
- The project would assist California utilities in meeting their obligations under the RPS Program and in meeting their obligations under CPUC's Energy Storage Framework and Design Program by providing up to 100 MW of storage capacity.

In addition, the project would require a short interconnection (0.3 mile) to the CAISO high-voltage electrical transmission system (grid) at the Gates Substation. The substation is already in place and operational; therefore, the project would use this interconnection point, and environmental impacts associated with construction of new interconnection facilities would be minimized. Furthermore, there are no sensitive receptors near the project site, and it is not located in a scenic area.

Although the Reduced Acreage Alternative, which was identified as the environmentally superior alternative in the EIR would accomplish most objectives, specific economic, social, and other benefits outweigh the environmental impacts of the proposed project. All other alternatives set forth in the EIR would prohibit the realization of all project objectives and similar to the environmentally superior alternative, specific economic, social, and other benefits outweigh any environmental impacts of the proposed project, and the other remaining alternatives would result in similar or even increased overall impacts on the environment.

Statement of Overriding Considerations Conclusions

The economic, legal, social, technological, and other benefits of the proposed project, as set forth above are weighed against the significant unavoidable impacts of the project identified in the EIR.

Having reduced the adverse significant environmental effects of the project to the fullest extent feasible by adopting the mitigation measures contained in the EIR, having considered the entire administrative record on the project, and having weighed the benefits of the project against its unavoidable adverse impacts after mitigation, each of the social, economic, environmental, and other benefits of the project—including the development of a 150-MW solar PV generation facility, an up to 20-MW solar PV generation facility, and an up to 100-MW energy storage facility that would help California meet the RPS Program goal, that would use existing energy

[1] Based on U.S. Energy Information Administration website: https://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/ca.pdf
[2] Based on Fifth Standard Solar Project Complex Air Quality and Greenhouse Gas Evaluation Technical Report, September 2019.

infrastructure to the extent possible by locating solar power generation facilities in close proximity (i.e., electrical transmission facilities), and that would stimulate local construction and operation employment—outweigh the potential unavoidable adverse impacts and render those potential adverse environmental impacts acceptable due to the following project benefits:

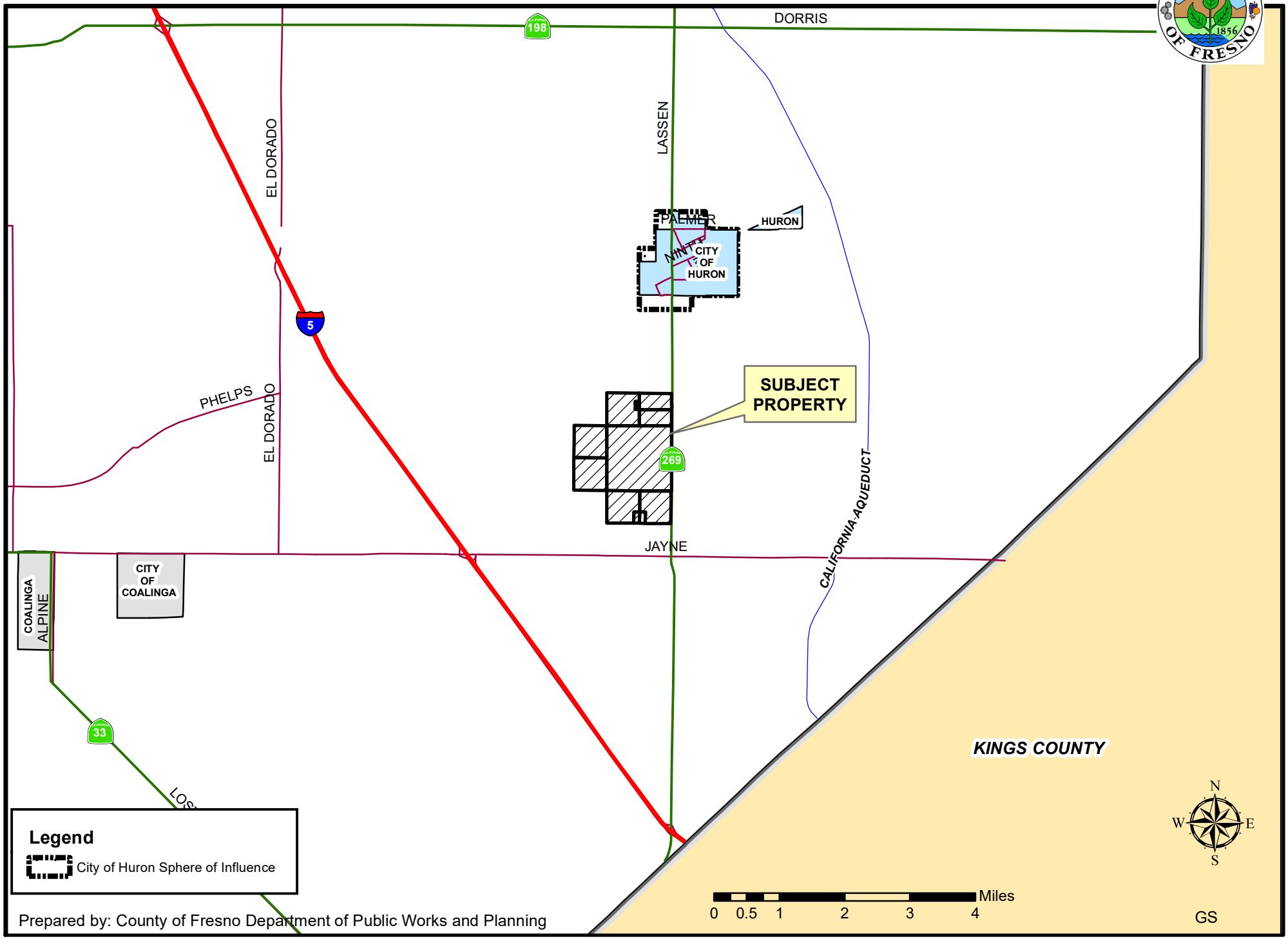
- Assist the State of California in achieving or exceeding its RPS and GHG emissions reduction objectives by developing and constructing a new solar power generation facility producing approximately 170 MW.
- Produce and transmit electricity at a competitive cost.
- Provide a new source of energy storage that assists the state in achieving or exceeding its energy storage mandates.
- Use the existing interconnection at the Gates Substation.
- Use existing energy infrastructure to the extent possible by locating solar power generation facilities in close proximity to existing infrastructure, such as electrical transmission facilities.
- Develop a solar power generation facility in Fresno County, which would support the economy by investing in the local community, creating local construction jobs, and increasing revenue to the County.

Recognizing that significant unavoidable impacts would result from implementation of the project. Having done the following: (i) incorporated all feasible mitigation measures as discussed in the EIR; (ii) rejected alternatives to the project as discussed in the EIR; and (iii) recognized the significant unavoidable impacts of the project, each of the separate benefits of the proposed project, as stated herein, is considered an overriding consideration, independent of other benefits, that warrants approval of the project and outweighs and overrides its significant unavoidable impacts, and justifies the approval of the project.

CUP 3562-64

LOCATION MAP

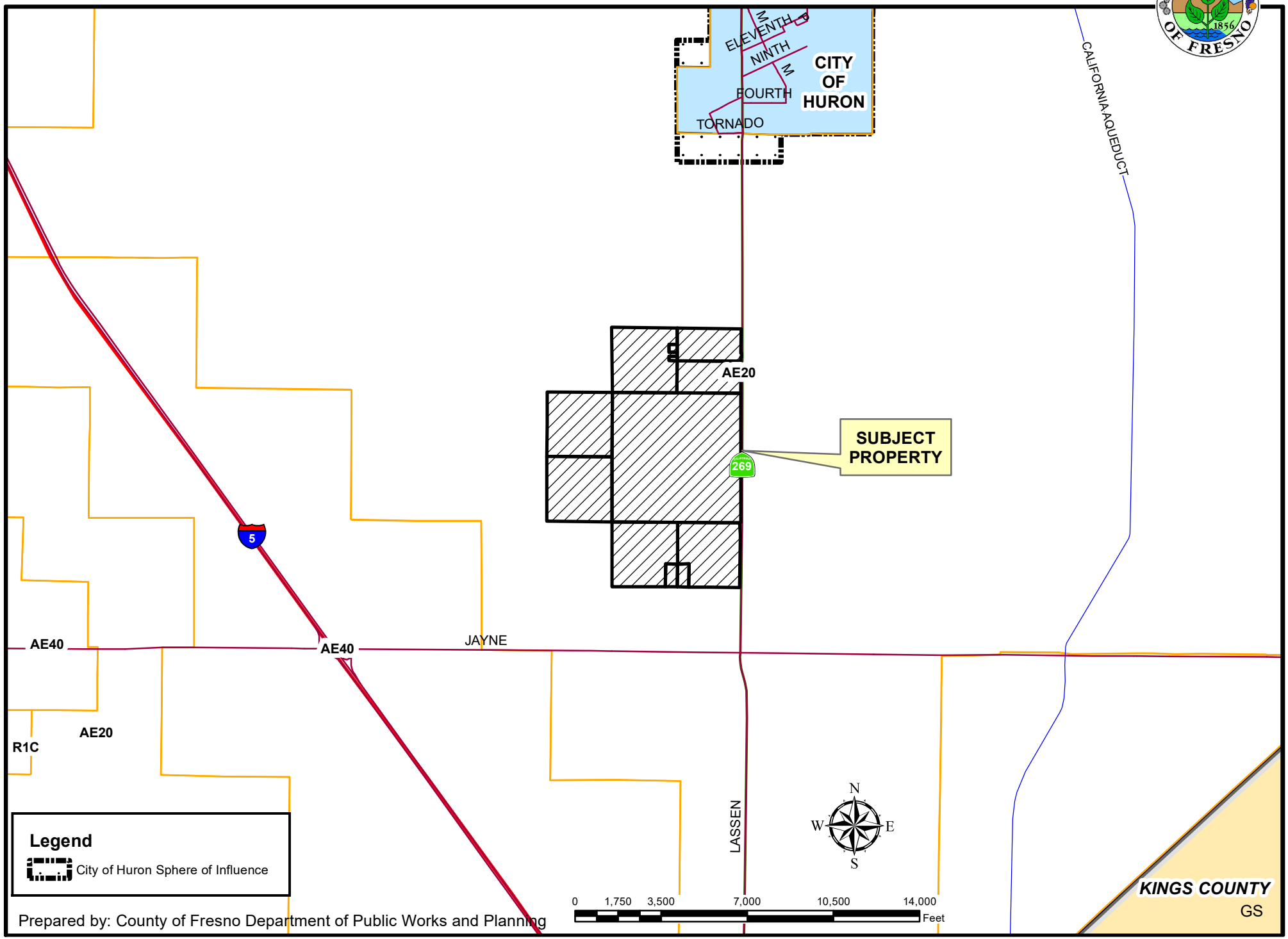
EXHIBIT 3



CUP 3562-64
STR 28-20/17

EXISTING ZONING MAP

EXHIBIT 4

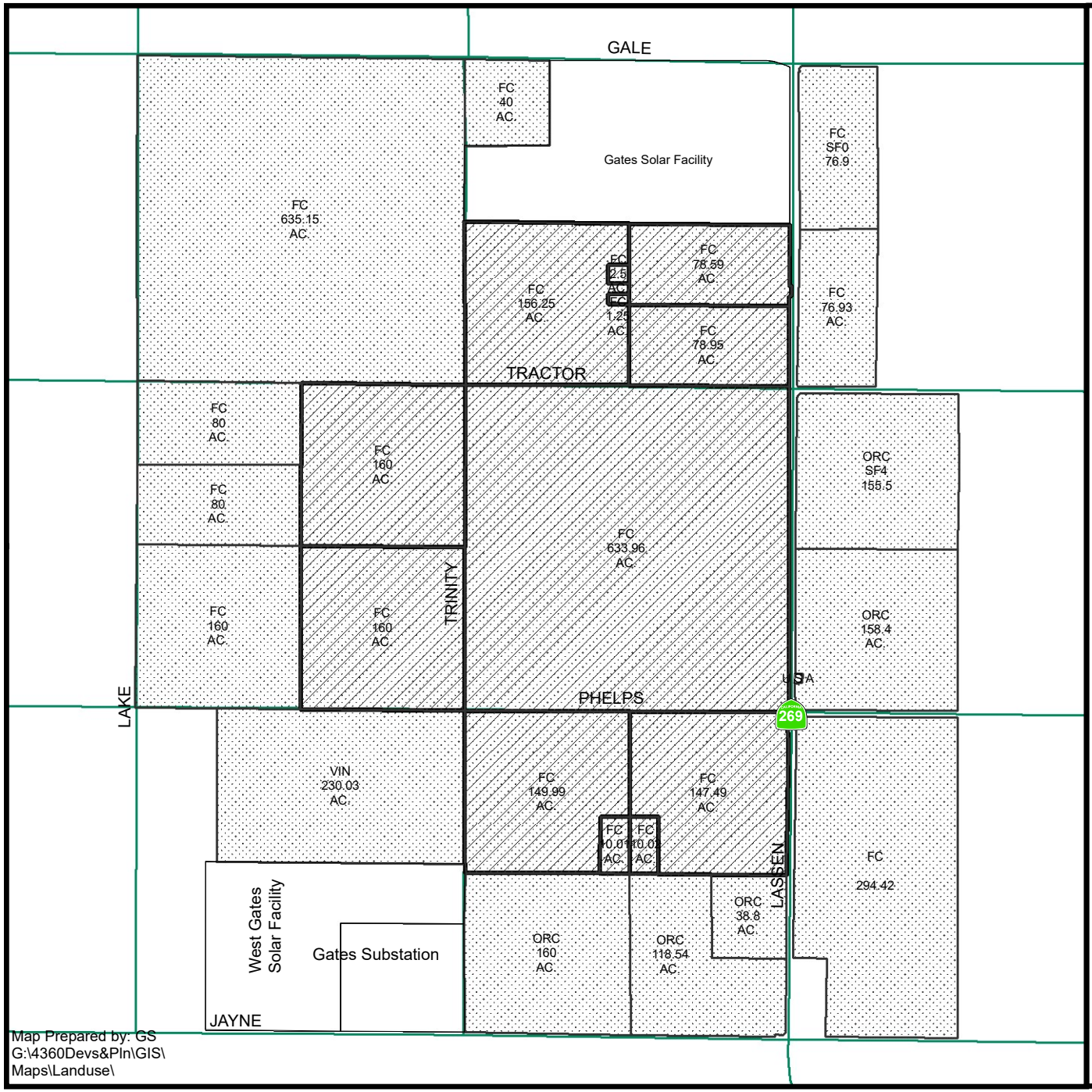


Prepared by: County of Fresno Department of Public Works and Planning

CUP 3562-64

EXISTING LAND USE MAP

EXHIBIT 5



LEGEND
FC - FIELD CROP
ORC - ORCHARD
SF#- SINGLE FAMILY RESIDENCE
V - VACANT
VIN - VINEYARD

LEGEND:

Subject Property

Ag Contract Land

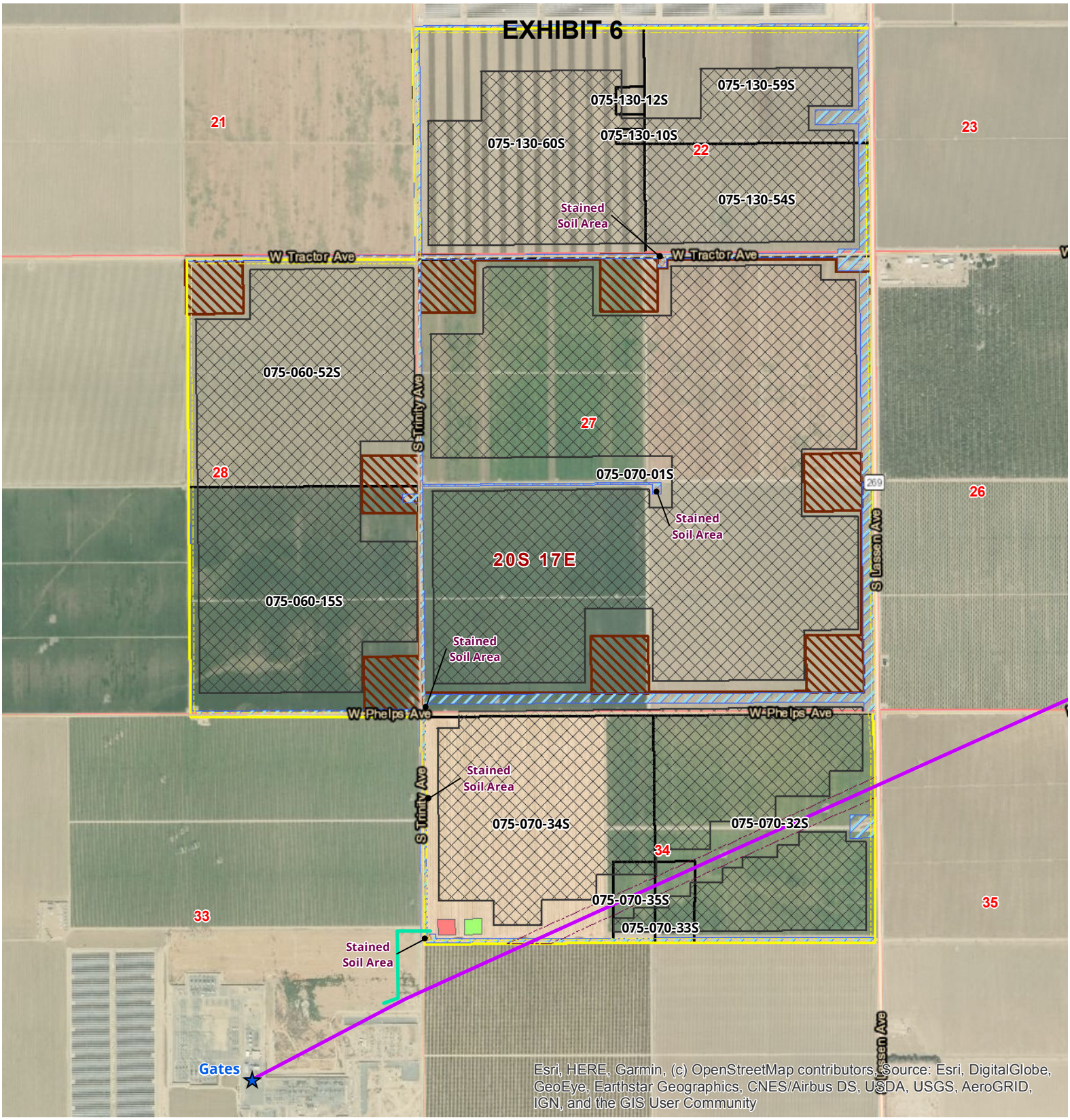
N W E S

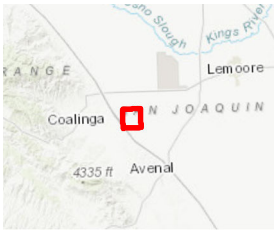
0 600 1,200 2,400 3,600 4,800 Feet

Department of Public Works and Planning
Development Sevices Division

Map Prepared by: GS
G:\4360Devs&Pln\GIS\Maps\Landuse\

EXHIBIT 6





Data Source: RWE Solar Development, LLC,2019.
Coordinate System: NAD 1983 State Plane California IV FIPS 0403 Feet.
See complete reference in EIR.

- Substation
- Project Gen-Tie Line
- Project Substation
- Project BESS
- Solar Panels

No Build Areas

- Transmission Line - 230 kV
- Transmission Line - 230 kV (105 Ft. Setback)
- Stained Soil Area
- Stained Soil Area (25 Ft. Setback)
- Water Infrastructure
- Drilling Pad
- Drilling Pad Corridor
- Internal Project Boundary (50 Ft. Setback)

Boundaries

- Project Boundary
- Parcel Boundary
- Township
- Section

Stantec

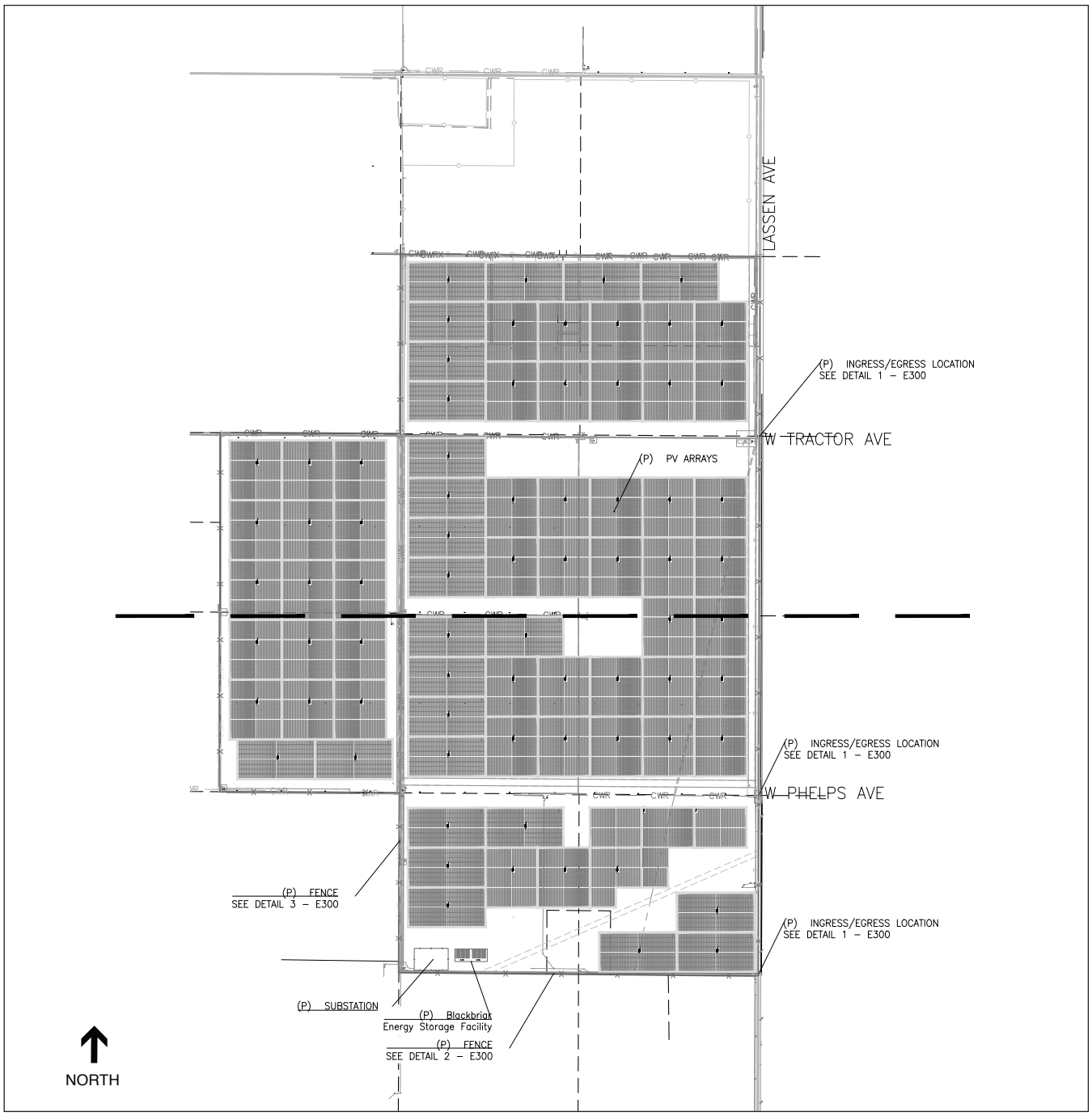
Figure No.
2 - 2

Title
Project Site - Conceptual Plan

Project
Fifth Standard Solar Project Complex

0 500 1,000 1,500 Feet

1:18,000



SOURCE: EC&R Solar Development, LLC

Fifth Standard Solar Project Complex . 120251

Figure 5

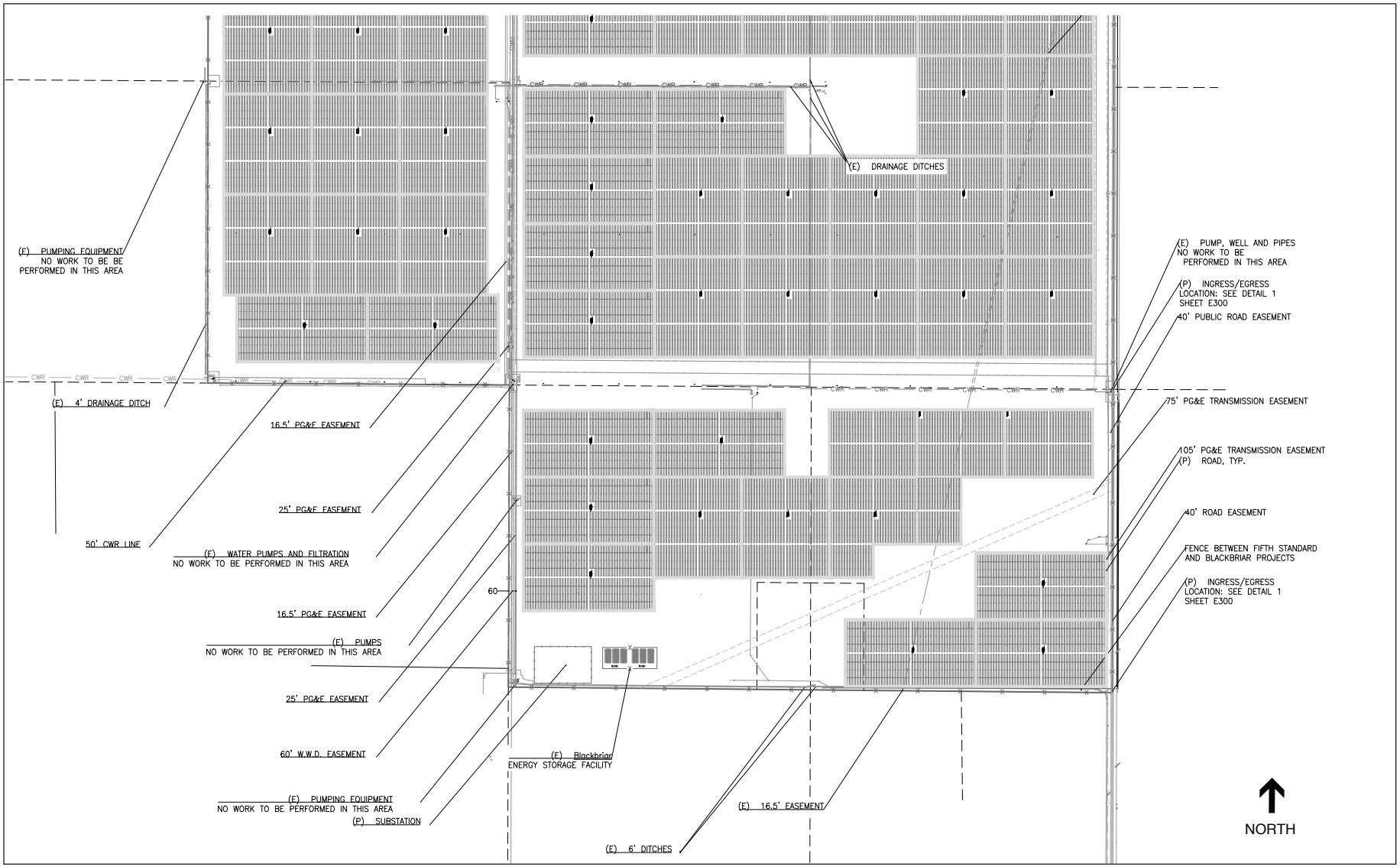
Plot Plan – Entire Site

SOURCE: EC&R Solar Development, LLC

Fifth Standard Solar Project Complex . 120251

Figure 5 (continued)

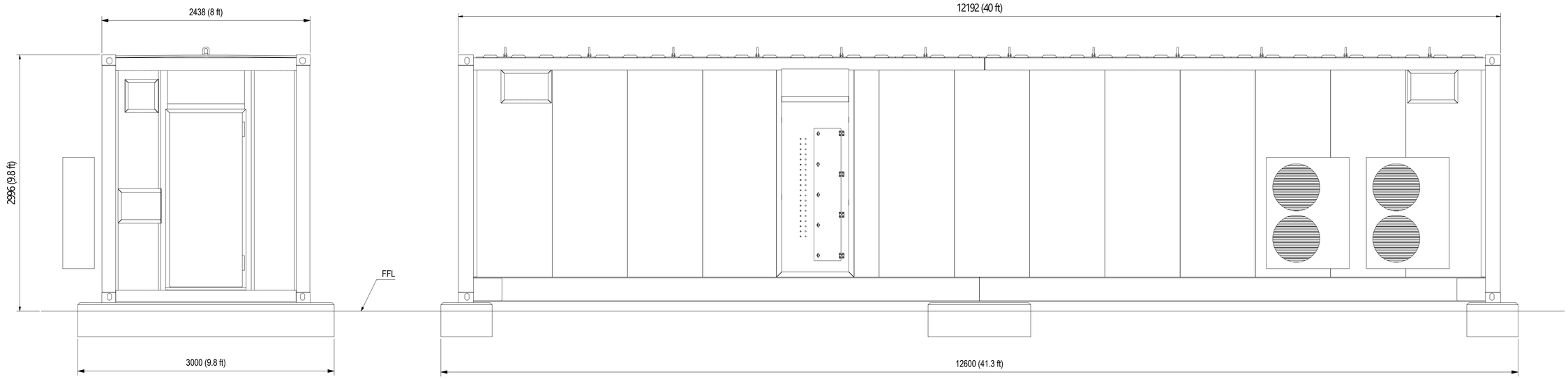
Plot Plan - Northern Half of Site at Larger Scale

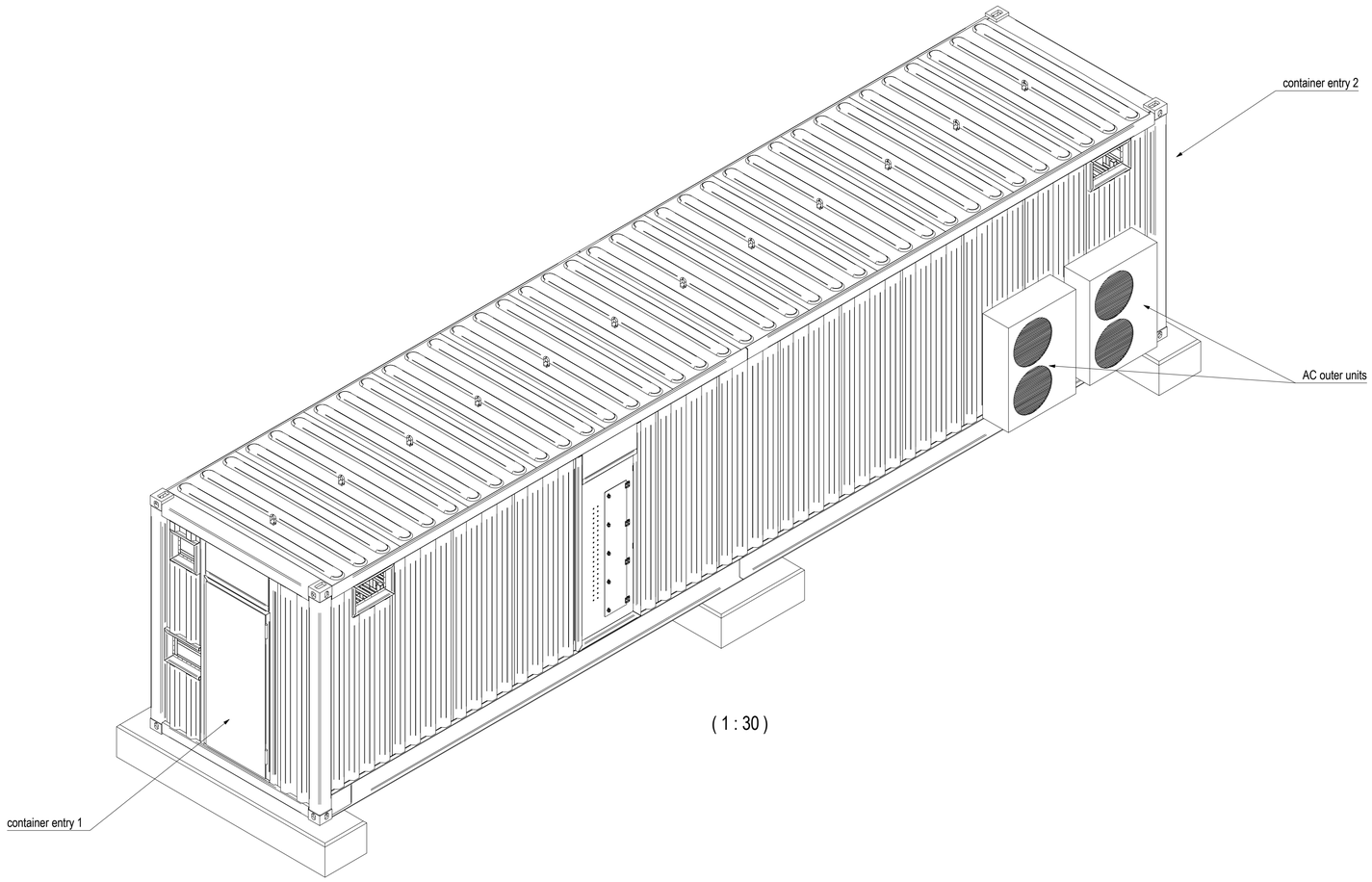


SOURCE: EC&R Solar Development, LLC

Figure 5 (continued)

Plot Plan - Southern Half of Site at Larger Scale





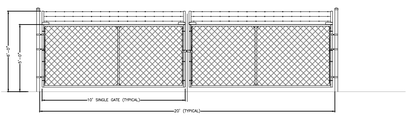
(1 : 30)

Note:
Measurements in Feet are rounded to 0.1 ft
Conversion factor: 1000 mm = 3,28 ft

REVISIONSVERLAUF

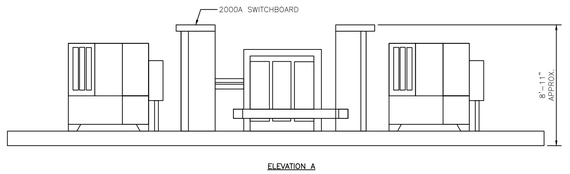
REV.	ÄNDERUNG	DATUM	BEARBEITER
0	created	20.08.2020	C.Marx
1	rev. for preliminary site prep	15.10.2020	C. Jannack
2	reduce to relevant measurements, translate to ft	16.10.2020	C. Jannack

Anzahl / quantity	Werkstückkanten nach / workpiece edges according to: DIN ISO 13715		Oberflächenangaben nach / surface specifications according to: DIN ISO 1302
	Maßstab / scale: 1 : 25		Werkstoff / material: -
	Projekt / project: LD		Halbzeug / semifinish
Allgemeintoleranz, Form und Lage / general tolerance, shape and position: DIN ISO 2768-mK	Erstellt / created:	20.08.2020	C.Marx
	Geprüft / audited:		
Allgemeintoleranz, Schweißkonstruktion / general tolerance, welded construction: DIN ISO 13920-B	Freigabe / released:		
Vermerk / note	Belectric GmbH Industriestr. 65 01129 Dresden +49 351 811 296 0		Bezeichnung / description: Container with foundation preliminary, cable glands might change
CAD: AutodeskE Inventor© 2017	Weitergabe sowie Vervielfältigung dieses Dokuments, Verwertung und Mitteilung seines Inhalts sind verboten, soweit nicht ausdrücklich gestattet. Zuwiderhandlungen verpflichten zu Schadenersatz. Alle Rechte für den Fall der Patent-, Gebrauchsmuster- oder Geschmacksmustereintragung vorbehalten.		Baustell-Nr. / component number: Rev. / rev.: Blatt / sheet: A1 1 von 1 Ers. durch / repl. by: Ers. für / repl. for:



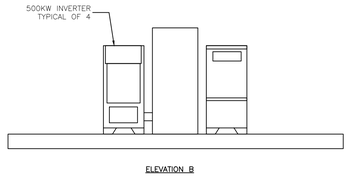
1 BI – DIRECTIONAL GATE ELEVATION
SCALE: 3/16"=1'-0"

4 NORTH OR SOUTH – TYPICAL ELEVATION
SCALE: 3/16"=1'-0"



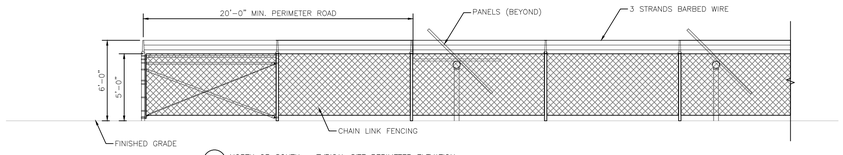
ELEVATION A

7 INVERTER /XFMR PAD
SCALE: NTS

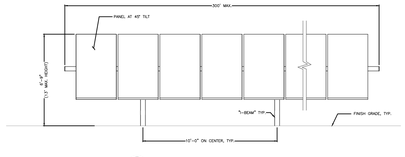


ELEVATION B

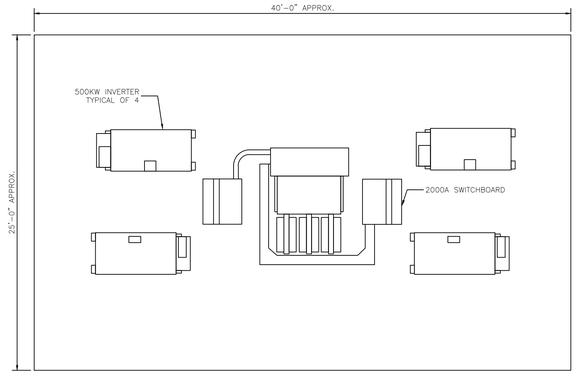
8 INVERTER /XFMR PAD
SCALE: NTS



2 NORTH OR SOUTH – TYPICAL SITE PERIMETER ELEVATION
SCALE: 3/16"=1'-0"

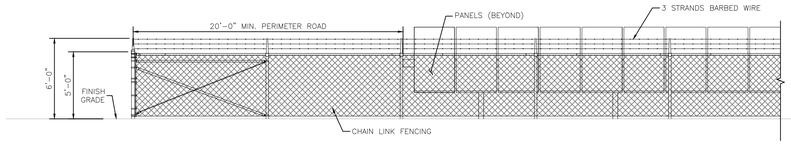


5 EAST OR WEST – TYPICAL ELEVATION
SCALE: 3/16"=1'-0"

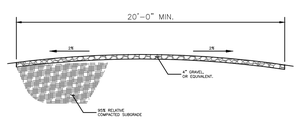


PLAN VIEW

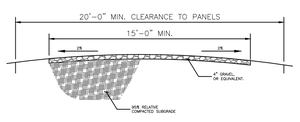
9 INVERTER /XFMR PAD
SCALE: NTS



3 EAST OR WEST – TYPICAL SITE PERIMETER ELEVATION
SCALE: 3/16"=1'-0"



PERIMETER ROAD



ACCESS ROAD

6 ROAD DETAILS
SCALE: 3/16"=1'-0"

CONCEPTUAL DESIGN – NOT FOR CONSTRUCTION

DATE	REV	DRAWN	DESCRIPTION
8/15/2016	1	EG	FOR CUP

E.ON Climate & Renewables
North America, LLC
20 California St., CA 94111
Tel +1-415-347-2586

	DATE	NAME
DRAWN:	2/1/2016	EG
VERIFIED:		
RELEASED:		

DWG NO.: #
PLOT DATE: September 8, 2016
FILE: E300-STANDARD DETAILS AND ELEVATIONS.dwg

DESCRIPTION

SOLAR PV PLANT
STANDARD DETAILS AND ELEVATIONS

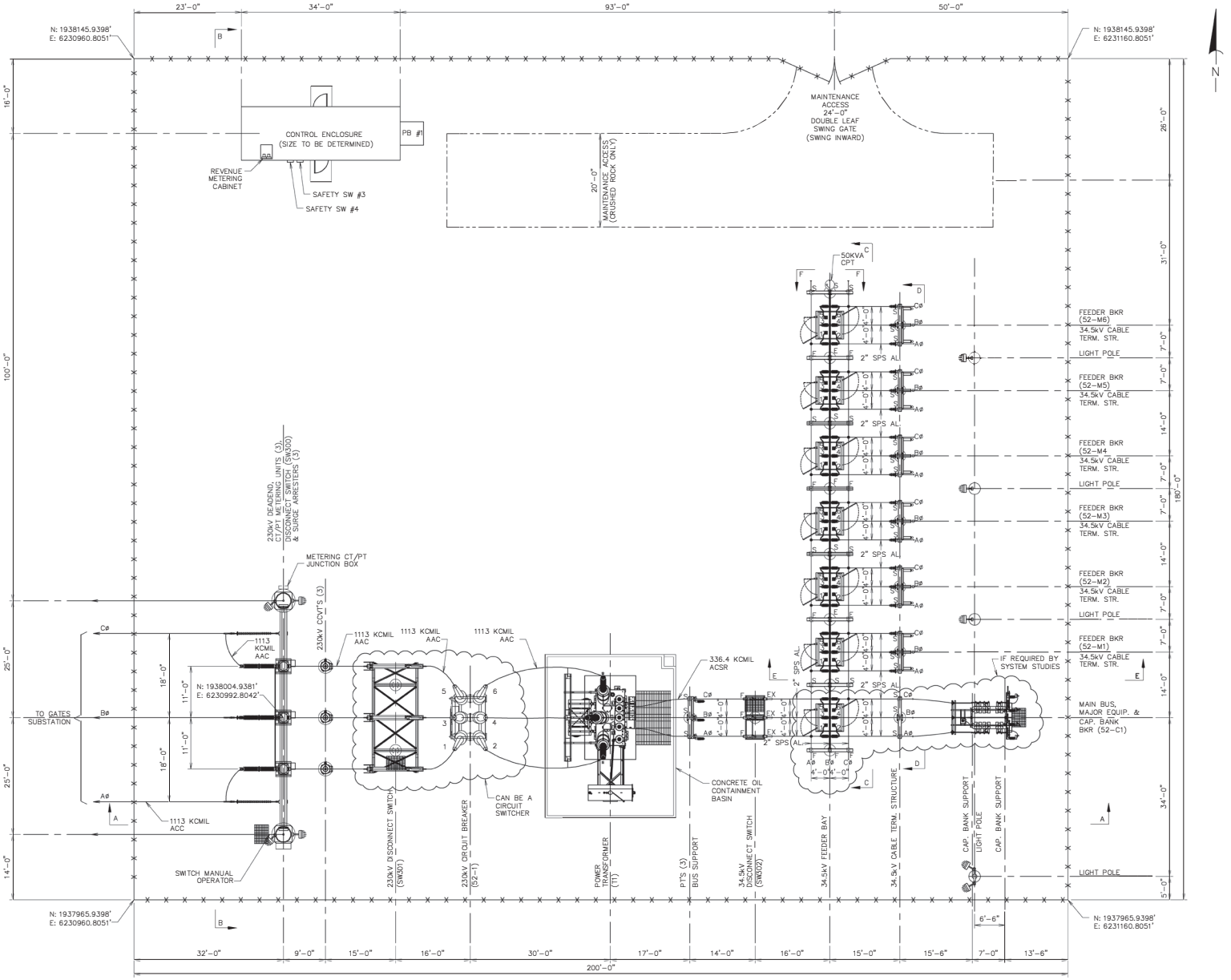
PROJECT:
FIFTH STANDARD COMPLEX

PROJECT LOCATION:
PHELPS AVE, FRESNO CO., CA 93234

LATITUDE / LONGITUDE / ELEVATION:
36.16N, 120.11W

SCALE: NTS

SHEET: E300



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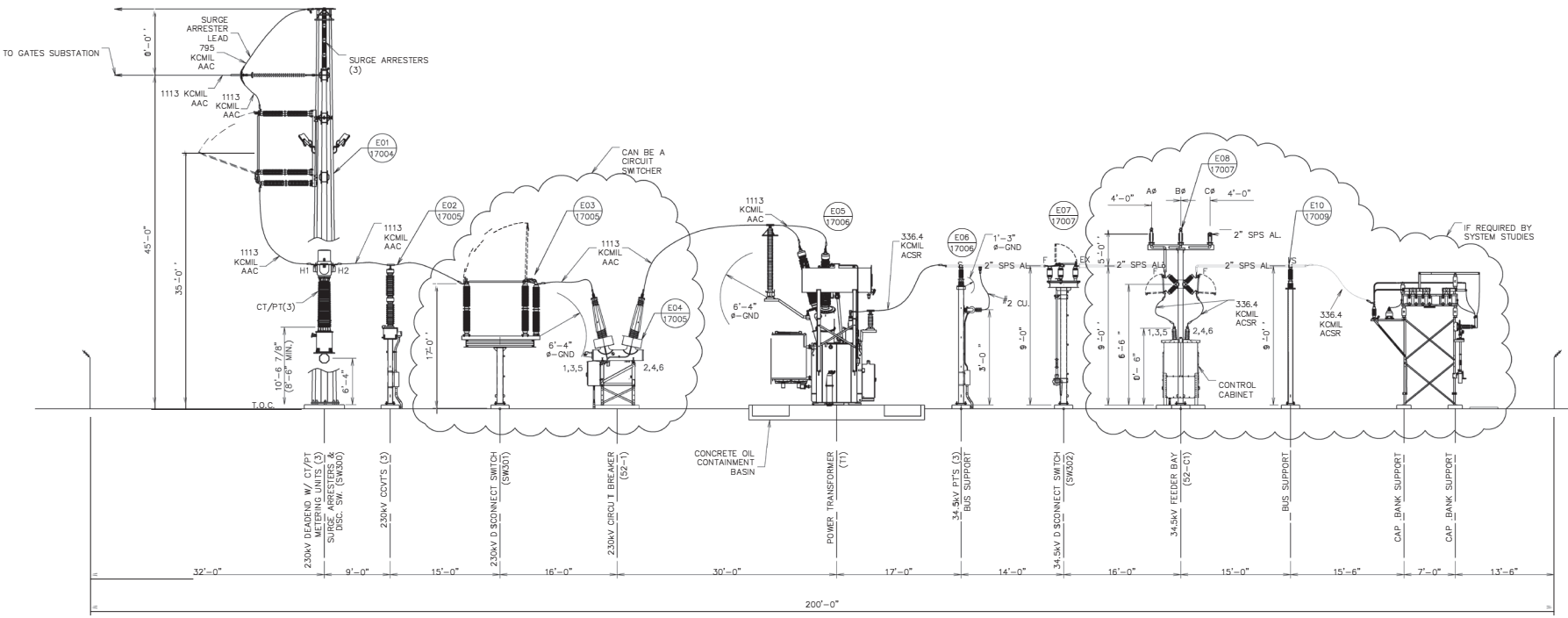
Data Source: RWE Solar Development , LLC, 2019.

Figure No.
2 - 6

Title
Substation Lay Out Drawing

Project
Fifth Standard Solar Project Complex



SECTION A–A

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Figure No.
2 - 7

Title
Substation Elevation

Project
Fifth Standard Solar Project Complex

Data Source: RWE Solar Development, LLC, 2019.

EXHIBIT 8

EC&R SOLAR DEVELOPMENT, LLC, FIFTH STANARD SOLAR PROJECT COMPLEX FRESNO COUNTY, CALIFORNIA

Pest and Weed Management Plan

Prepared for
EC&R Solar Development, LLC

April 2018

EC&R SOLAR DEVELOPMENT, LLC, FIFTH STANARD SOLAR PROJECT COMPLEX FRESNO COUNTY, CALIFORNIA

Pest and Weed Management Plan

Prepared for
EC&R Solar Development, LLC

April 2018

1425 N. McDowell Boulevard
Suite 200
Petaluma, CA 94954
707.795.0900
www.esassoc.com

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Miami	San Diego	

120251

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TABLE OF CONTENTS

Fifth Standard Solar Project Complex
Pest and Weed Management Plan

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CHAPTER 1
Introduction

1.1 Purpose of Plan

EC&R is proposing to construct, operate, maintain, and ultimately to decommission the Fifth Standard Solar Project Complex on an approximately 1,588-acre site in unincorporated Fresno County (the "Project"). This Weed and Pest Management Plan has been prepared by EC&R Solar Development LLC. (EC&R) to comply with Fresno County's Board of Supervisor recommended Solar Facility Guidelines which balance the need to accommodate renewable technology with the need to protect farmlands and minimize impacts to existing agricultural operations. These Guidelines request that solar project proponents "develop and submit a project site pest management plan to identify methods and frequency to manage weeds, insects, disease and vertebrate pests that may impact adjacent sites". In the absence of appropriate pest management activities, solar facilities may have the potential to contribute to the spread of non-native invasive vegetation and create habitat or otherwise harbor populations of vertebrate nuisance species that could impact onsite solar facilities and neighboring agricultural properties. Uncontrolled growth of weeds not only provides cover for vertebrate pests, it can also become a fire hazard and contribute to "public nuisance" situations, which are prohibited by law.

EC&R recognizes the importance of the development of and adherence to a weed and pest management plan on the Project Site to ensure that the site does not harbor pests or vectors that could interfere with the right to farm of neighboring properties (Fresno County Ordinance §17.04.100) or otherwise adversely affect nearby farming activities. EC&R[1] intends to work cooperatively with neighboring landowners to avoid conflicts that may arise from Project operations in relation to pest management. EC&R is committed to the strategies discussed below to manage weeds, vertebrate pests, and disease vectors. The Project owner will implement practices that will effectively manage weeds and pest populations while minimizing any adverse environmental impacts to the greatest extent possible. Integrating compatible management measures will minimize risks associated with operation of the facility and is one that employs a good-neighbor approach, respecting the long-term viability of agriculture in the region.

[1] Or subsequent project owner/operator if EC&R is not the Project owner at the time of construction

1.2 Project Description

The Project Site is located two miles east of Interstate 5 (I-5), 1.5 miles south of Huron, and approximately 13 miles east of Coalinga (see **Figure 1, Project Location)**. The Project comprises three facilities:

- Fifth Standard Solar Facility: a 150 megawatt (MW) photovoltaic (PV) solar energy generation facility that is anticipated to require up to 1,400 acres of the site.
- Stonecrop Solar Facility: a 20 MW PV facility that will be located adjacent to Fifth Standard Solar and will require less than 200 acres of the site.
- Blackbriar Battery Storage Facility: a 20 MW battery storage facility that will be located adjacent to Fifth Standard Solar and Stonecrop, and will utilize less than 5 acres of the site.

The three facilities are proposed for processing separately, with each having its own Unclassified Conditional Use Permit so that the electricity/storage capacity from each facility could be sold separately or in combination.

1.3 Pest and Weed Definitions

1.3.1 Vertebrate Pests

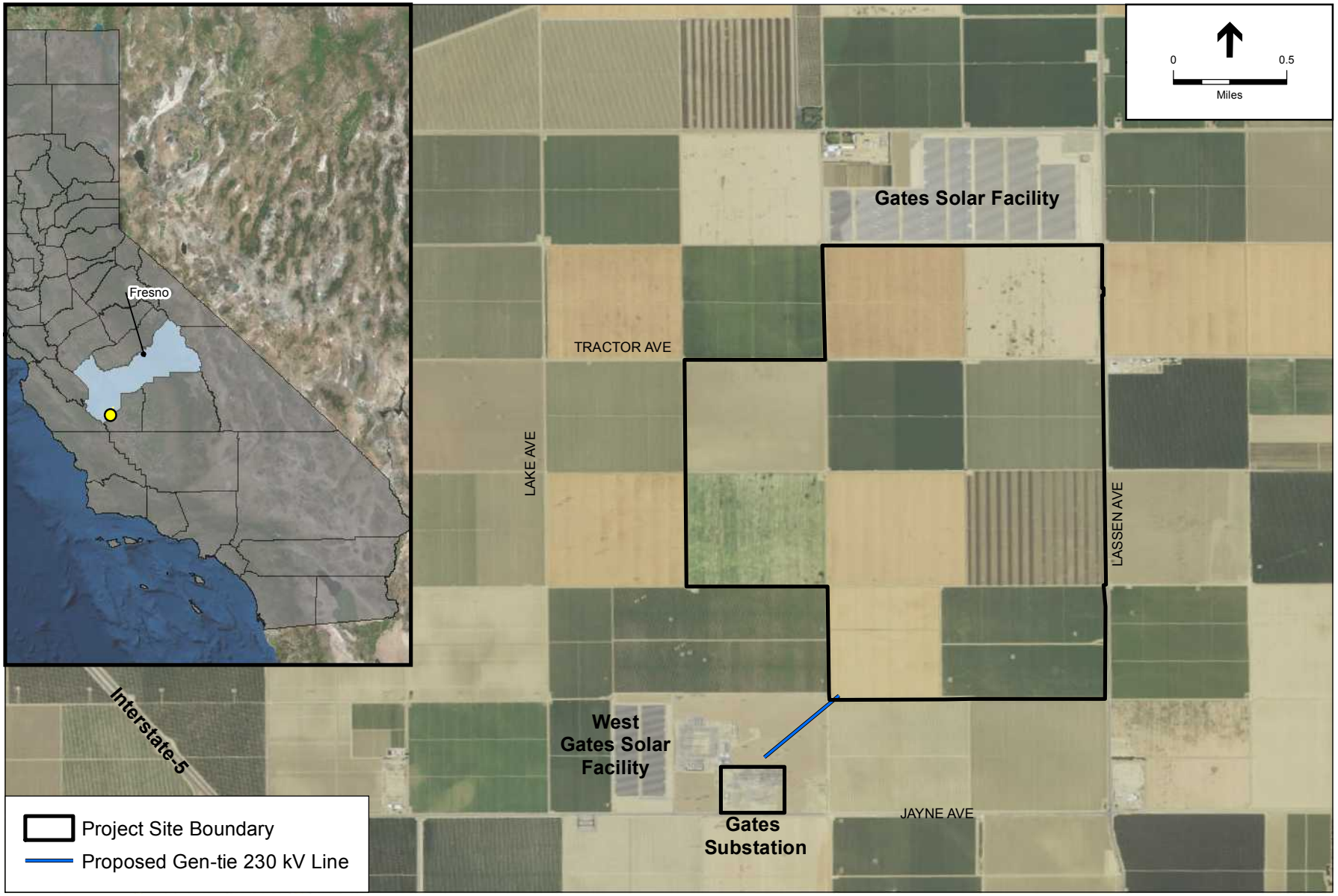
In the State of California, all wildlife species that are not held in private ownership or otherwise acquired by legal means are the property of the State. Such species, which include mammals, birds, fish, reptiles, amphibians, mollusks, and crustaceans, are regulated under Fish and Game Code. Wildlife in California, as a 'public' resource", are protected by both state and federal laws.

A vertebrate 'pest' is any animal which is detrimental to humans or human interests. Such species may be native or introduced, and may additionally be afforded protected status. Hence, prior to embarking on any vertebrate pest management program, the federal and or state legal status of the animal must be determined. The legal status afforded an animal will determine the selection of an appropriate management technique, whether lethal or non-lethal, or an integrated pest management program.

In an agricultural setting, the typical vertebrate pests that cause agricultural damage and require control are small mammals. Examples of such species include mice, rats, pocket gophers, ground squirrels, and voles. Under Fish and Game Code, such species are classified as non-game animals. The Fish and Game Code establishes that legal means can be used to control non-game mammals that are deemed injurious to crops and other property.

1.3.2 Weeds

A "noxious weed" is defined under the Federal Plant Protection Act (7 U.S.C. 7701, et seq.) as a plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation,



SOURCE: ESRI

Fifth Standard Solar Project Complex. 120251

Figure 1

Project Location

navigation, the natural resources of the U.S., public health or the environment. Weeds tend to be non-native invasive vegetation that when uncontrolled can crowd out native vegetation, degrade the food and water supply, alter soil chemistry, structure, and/or habitats, conflict with agricultural objectives, and through their fast rate of growth contribute to hazards such as wildfires. Weeds often colonize and rapidly spread in disturbed sites, such as construction areas, roadsides, and in other places with altered soil conditions.

1.4 Existing Conditions

The Project Site is used for both dry-farming and irrigated farming. Over the last 10 years, a significant portion of the Project Site has been fallow or planted with wheat (a non-irrigated, low-value crop) due to site constraints, including inadequate surface and groundwater supply, poor groundwater quality and limited irrigation infrastructure (Environmental Science Associates (ESA), 2016). Since 2009, an average of approximately 420 acres per year of the available 1,594 acres at the site has been planted with wheat or left fallow, equivalent to about thirty percent per year.

On March 3, 2016, ESA Biologist Brian Pittman conducted a field survey to assess existing conditions on the Project Site (ESA 2016b). At the time of survey the site was being used for various types of agricultural crop production. primarily dry-farmed wheat, irrigated tomatoes and areas of fallow ground. The U.S. Department of Agriculture (USDA) Soil Survey Geographic database was used to map soils occurring on the Project Site and in the surrounding area. Soils within the Project Site range from excelsior sandy loam, sandy substratum, to westhaven loam and typically include 0 to 2 percent slopes. All soils are classified as Prime Farmland based on their physical characteristics. All of the soils are moderately well-drained or well-drained (USDA, 2016).

Neighboring land uses consisting of agricultural and other solar operations were noted during the site visit. Noted features include solar facilities immediately to the north of the site; tilled small orchards to the west; citrus orchards, bare tilled ground, an irrigation ditch, and unidentified vines to the south; tilled and active annual crops such as wheat, tomatoes as well as a newly planted orchard, and agricultural buildings to the east of the site. Due to active cultivation at the time of the biological survey, few non-native, non-agricultural species were observed on the site.

1.5 Plan Objectives

This Plan describes vertebrate pests and weeds that, as a result of construction and operation of the Project: 1) either currently occur on the Project Site and/or surrounding area and which could increase in numbers or, 2) which could be introduced and established on the site or surrounding area. The primary objective of the development and implementation of this Plan is to reduce the potentially adverse effects associated with the presence of vertebrate pests and weeds on agricultural crops, equipment and soils. This objective is achieved as follows:

- **Prevention:** Prevention efforts are aimed at reducing expansion and spread of existing weed and pest infestations until suppression or eradication can be effected. Prevention is only

feasible to the extent that the spread of seeds, vegetative matter and pests can be controlled and/or prevented.

- **Management:** Management efforts aim to reduce or eliminate a pest or weed within a specified area and to maintain that area as relatively pest/weed free on an ongoing basis.

- **Suppression:** Suppression is applied where a pest or weed is currently established in an area. It is aimed at reducing the existing infestation density without reducing the overall size of the area of total infestation.

1.6 Management Roles

The Project owner will be responsible for the implementation of this Plan. This responsibility may be assigned as follows:

- **Contractor (s):** Contractual language will be included in construction documents and ongoing maintenance contracts to ensure that contractors, subcontractors, vendors, maintenance personnel and other parties, performing either construction or ongoing maintenance or repairs at the project site, abide by and implement the provisions of this plan. Implementing the construction provisions of this plan will be a part of construction contracts. Restoration contractors, landscape contractors, and other specialists will implement specific provisions of this plan either as subcontractors to the general construction contractor, or through independent contracts with the Project owner.

- **Construction Manager:** The construction manager will have ultimate oversight of the construction contractor to ensure compliance with the provisions of this plan.

- **Environmental Compliance Adviser:** The Project owner will designate an Environmental Compliance Adviser (ECA) to provide oversight of construction and maintenance practices and ensure compliance with the provisions of this plan. The environmental compliance advisor will be contracted directly by the Project owner and will coordinate with the construction manager to ensure contractor compliance with environmental requirements for construction and with the power plant operator to ensure compliance during ongoing maintenance activities.

- **Fresno County Agricultural Commissioner's Office:** site-specific Pesticide Use Permits for pesticide and rodenticide applications will be obtained, as necessary, from the Fresno County Agricultural Commissioner's office. In addition, the Project owner shall work with the Fresno County Agricultural Commissioner's office to monitor the plan's effectiveness and implement changes and/or additional controls.

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CHAPTER 2
Regulatory Setting

There are several federal, state and local agencies that have a role in the control and management of vertebrate pests and weeds through the implementation of applicable regulations. These are detailed below.

2.1 Federal

2.1.1 U.S. Department of Agriculture

Through the Animal and Plant Health Inspection Service (APHIS), the U.S. Department of Agriculture (USDA) is responsible for protecting and promoting agricultural health, regulating genetically engineered organisms, administering the Animal Welfare Act, and carrying out wildlife damage management activities. The overall mission of the USDA is to protect and promote food, agriculture, natural resources and related issues. In the event of pest of disease detection, APHIS implements emergency protocols partnering with affected states to manage or eradicate the outbreak, effectively reducing agricultural threats such as spread of pests and disease. Through this implementing authority, this federal agency is authorized to control vertebrates such as birds and rodents, in coordination with the California Department of Food and Agriculture (USDA, 2016b).

2.1.2 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS), responsible for conservation of the nation's fish, wildlife and plants, carries out an invasive species program in recognition that invasive species can degrade, change, or displace native habitats to the detriment of wildlife and native plant resources. The USFWS acts in cooperation with California Department of Fish and Wildlife (CDFW) with this mandate.

2.1.3 Federal Noxious Weed Act of 1974

Upon finding that that noxious weeds interfere with growth of useful plants, clog water ways, interfere with navigation, cause disease, and are generally detrimental to agriculture, commerce, and public health, the U.S. Congress passed the Federal Noxious Weed Act of 1974 (U.S.C. Sections 2801-2874, as amended 1988, and 1994). The Act provides for the control and management of nonindigenous weeds that injure or have the potential to injure the interests of agriculture, commerce, wildlife resources, or the public health.

2.1.4 Plant Protection Act of 2000

The Plant Protection Act of 2000, as amended (7 U.S.C. 7701-7786) recognizes that the detection, control, eradication, suppression, prevention, or retardation of the spread of plant pests or noxious weeds is necessary for the protection of the agriculture, environment, and economy of the United States. This law regulates the movement of plant pests, plant parts, plant products, biological control organisms, noxious weeds, articles and means of conveyance, and authorizes the issuance of implementing regulations.

2.1.5 Noxious Weed Control and Eradication Act of 2004

Public Law 108-412 or the Noxious Weed Control and Eradication Act of 2004 amended the Plant Protection Act of 2000 requiring the Secretary of Agriculture to establish a program to provide assistance to eligible weed management entities to control or eradicate noxious weeds on public and private land (USDA, 2016a).

2.2 State

2.2.1 California Department of Fish and Wildlife

The mission of the California Department of Fish and Wildlife is to "manage California's diverse fish, wildlife, and plant resources and the habitats upon which they depend for their ecological values and for their enjoyment by the public" (CDFW, 2017b).

2.2.2 California Environmental Protection Agency

The mission of the California Environmental Protection Agency (CalEPA) is to restore, protect and enhance the environment, to ensure public health, environmental quality and economic vitality. CalEPA fulfills this mission by developing, implementing, and enforcing environmental laws that regulate air, water and soil quality, pesticide use and waste recycling/reduction. The CalEPA oversees the State Water Resources Control Board and the Department of Pesticide Regulation, among other state agencies. The Department of Pesticide Regulation (DPR) has the primary responsibility for regulating all aspects of pesticide sales and use to protect the public health and the environment. DPR's mission is to protect human health and the environment by regulating pesticide sales and use, and by fostering reduced-risk pest management (CalEPA, 2017).

2.2.3 California Food and Agricultural Code/ California Department of Food and Agriculture

California Food and Agricultural Code contains numerous provisions for weed management to prevent the introduction and spread of injurious insect and animal pests, plant diseases, and weeds. Division 4, Sections 7270-7276 pertain to noxious weeds management and includes provisions for funding, research, and support staff to address the threats to crop losses, degradation of wildlife, wetlands and waterways posed by invasive species.

The California Department of Agriculture (CDFA), a cabinet level state agency, implements the California Food and Agricultural Code toward the protection of agricultural plants, animals and the food supply. CDFA oversees agricultural standards, inspection, plant health and pest prevention, among other administrative offices to carry out the state's food safety regulation and policies.

2.2.4 California Endangered Species Act

Enacted in 1984 as a parallel to the federal Endangered Species Act, the California Endangered Species Act (CESA) empowers the Fish and Game Commission to designate species including plants as threatened or endangered. CESA makes it illegal to import, export, "take", possess, purchase, sell, or attempt to do any of those actions to species that are designated as threatened, endangered, or candidates for listing, unless permitted by CDFW (CDFW, 2017a).

2.2.5 The Native Plant Protection Act

The Native Plant Protection Act enacted in 1977, allows the California Fish and Game Commission to designate certain plants as "rare" or "endangered", prohibiting unpermitted take of these species.

2.3 Local

The Fresno County Department of Agriculture, under the direction of the California Department of Food and Agriculture, is responsible for conducting regulatory and service functions pertaining to the agricultural industry in Fresno County. These functions are mandated by state and federal laws and regulations and by local measures and ordinances by the Fresno County Board of Supervisors. Even though the enforcement of these laws and regulations is an important part of the Agricultural Specialists' jobs, the primary purposes of the Agricultural Commissioner's Office is the promotion and protection of the county agricultural industry, while safeguarding the general public. Through the Agricultural Commissioner's office, Fresno County regulates the use of agricultural chemicals, pesticides, and herbicides in the county in order to limit preventable hazards such as overspray (or drift), contamination of surface waters, and pesticide-related illness or injury. Fresno County is actively engaged in pest detection and exclusion, engages in quarantine enforcement and provides support for a multitude of other pest management activities.

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CHAPTER 3
Weeds

3.1 Weed Assessment

A biological site investigation was conducted on March 3, 2016 for the proposed solar facility to identify baseline or existing conditions for the site (ESA, 2016b). This survey identified soil, land use and site conditions that indicated that a number of weed species could inhabit the site once regular tilling ceases. **Table 1** below provides summary information for these species along with their associated invasiveness rating, as assigned by the California Invasive Plant Council (Cal-IPC). Invasiveness rating categories as defined by Cal-IPC are provided below (Cal-IPC, 2017).

- **High** – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

- **Moderate** – These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

- **Limited** – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

- **Alert** – An Alert is listed for species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much further.

- **Watch** – These species have been assessed as posing a high risk of becoming invasive in the future in California.

TABLE 1
NON-NATIVE SPECIES OBSERVED ON THE FIFTH STANDARD PROJECT SITE

Scientific Name	Common Name	California Invasive Plant Rating
Avena fatua	wild oat	Moderate
Brassica spp.	mustard	Limited
Bromus diandrus	ripgut brome	Moderate
Bromus rubens	foxtail	High
Herterotheca grandifolia	telegraph weed	Native to California- can be invasive
Ipomoea indica	morning glory	Watch
Lactua serriola	prickly lettuce	Not listed
Raphanus sativus	wild radish	Limited
Salix spp.	willow	Not listed
Salsola tragus	Russian thistle	Limited
Sorgham halepense	Johnsongrass	Not listed
Verbascum Thapsus	Wooly mullien	Limited

SOURCES: ESA, 2016a; Cal-IPC, 2017.

Plant profiles for these species are provided for reference below (Cal-IPC, 2017).

Avena fatua (wild oat) is a winter annual grass (family Poaceae) that is a common cultivar species that is also recognized as an agricultural weed. As one of California's most common grassland weeds, this species has ubiquitous distribution the State. It thrives in grazed and ungrazed grasslands and pasturelands, often in areas with sandy or poor soils. It is one of the annual grasses that was introduced as a forage species and has replaced the native perennial grasses.

Brassica spp. (common mustard and black mustard) are winter annual herbs (family Brassicaceae) located throughout California. Birdsrape is resistant to frost and mild freezes and is an aggressive plant that grows profusely and may produce allelopathic chemicals that inhibit germination of native plants. Buried seeds can survive 50 years or more. Black mustard is a similar annual herb that spreads quickly in disturbed soils.

Bromus diandrus (ripgut brome) is an annual grass found throughout California and other western states. Ripgut brome is one of several European annual grasses that have displaced much of the native grass throughout California. Ripgut brome becomes very dry and flammable during the dry season, increasing wildfire frequency. Increased wildfire frequency leads to conversion of shrubland and woodland to grassland. Brome seeds may spread great distances via water and soil movement and by clinging to animals and people.

Bromus madritensis* ssp. *rubens (*=B. rubens*) (foxtail, red brome) is a cool-season annual grass found throughout California, especially in the southern part of the state. Red brome invades disturbed areas, roadsides, agricultural fields, rangelands, and forestry sites, in addition to native communities. Red brome is spreading rapidly in desert shrublands, pinyon pine-juniper

communities, three-needle pine woodlands, and coastal scrub, where it increases fire frequency and converts habitat to annual grassland.

Ipomoea indica (blue morning glory) is a vine (family Convolvulaceae) with blue-purple flowers and lobed to oval-shaped leaves found in the San Francisco Bay area and the central and south coast ranges of California. It is native to the southeastern United States. It favors riparian and bottomland habitat. It reproduces vegetatively via root fragments and can sometimes also produce seed. Stems resprout vigorously when cut. Stem fragments are commonly spread by water, animals and in dumped garden waste.

Raphanus sativus (radish) is an annual or occasionally a perennial (family Brassicaceae) that frequently invades grasslands and open/disturbed areas, including roadsides in California. Wild radish may also be found in wetland areas. Wild radishes are capable of excluding native plant species and are, on rare occasion, toxic to livestock.

Salsola tragus (Russian-thistle, tumbleweed) is a large, bushy summer annual (family Chenopodiaceae). It can be found throughout California, including in agricultural areas, desert, roadsides and other disturbed areas. Russian-thistle can impede traffic, create fire hazards, and is a host of the beet leaf-hopper, an agricultural insect pest.

Verbascum thapsus (common mullein, woolly mullein) is a biennial or annual forb (family Scrophulariaceae) that occurs throughout California, but is particularly abundant in dry valleys on the eastern side of the Sierra Nevada. High population densities have been observed in moist meadows and creek drainages near Mono Lake and Owens Valley. Common mullein is a host for insects that are themselves economic pests. Common mullein seeds can survive for 35 years or more in the soil.

3.2 Weed Management

3.2.1 Project Design Measures

As described in the detailed project description provided to the County (ESA, 2016), several measures are proposed as part of the Project that will limit the potential for adverse effects associated with weeds. These include:

- Site design that generally maintains predevelopment drainage patterns and topography.
- Vehicles and equipment will be parked on pavement, existing roads and previously disturbed areas to the extent practicable.
- When materials are transported off site, all material will be covered or wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container will be maintained.
- During grading, erosion prevention measures will be implemented—including separation of topsoil, where topsoil is separated and stockpiled separately from subsoil and stabilized—to prevent erosion. When Project construction is complete, stripped subsoil and topsoil will be

replaced as required. Other erosion and sediment control measures will include watering for dust control and soil compaction during grading and throughout construction activities.

- A registered Civil Engineer in conformance with industry standards will prepare erosion control designs for the Project. Soil erosion can be a major contributor to the spread of weeds, as propagation material is easily spread in runoff and sediment. As the Project will result in disturbance of an area greater than one acre, the Project owner will be required to enroll (under the State Construction General Permit) for the National Pollution Discharge Elimination System program as there are several potentially-jurisdictional aquatic features located on the eastern fringe of the Project Site, including an agricultural pond located immediately adjacent to Lassen Ave. To enroll under this permit, the Project owner will prepare a Storm Water Pollution Prevention Plan (SWPPP) that details Project information; monitoring and reporting procedures; and Best Management Practices (BMPs) (such as dewatering procedures, storm water runoff quality control measures, and concrete waste management, as necessary).

  The SWPPP will include measures to ensure that all pollutants and their sources are controlled; non-storm water discharges are identified and either eliminated, controlled, or treated; site BMPs are effective and result in the reduction or elimination of pollutants in storm water discharges and authorized non-storm water discharges; and BMPs installed to reduce or eliminate pollutants after construction are completed and maintained. Erosion control plans detailed within the SWPPP will specify the implementation of typical erosion control devices including straw wattles, check dams, fabric blankets, and silt fencing. All erosion control materials will be biodegradable and natural fiber. Grading will be minimized as much as possible. The Project will be constructed to follow the existing topography of the Project Site as much as possible to limit erosion potential and maintain existing drainage patterns. The SWPPP will be based on final engineering design and will include all Project components.

In addition to these measures, weed management efforts will be implemented throughout the Project Site with specific measures being employed depending in particular areas, as described in more detail below.

3.2.2 Temporary Disturbance Areas

The entire site has been subject to temporary disturbances for decades as a result of agricultural cultivation. Temporary disturbance creates soil conditions that can encourage establishment of invasive weed species who are adapted to thrive in disturbed conditions. The Project design is intended to further minimize ground disturbance and grading as much as possible. Areas of temporary disturbance will be limited to those required for construction staging and laydown and temporary access roads. Construction laydown and staging areas will be located within the Project Site and secured by temporary, free standing chain-link fence for the duration of construction activities. Following construction, laydown and staging areas and temporary roads will be fully restored to as close to pre-construction conditions as possible.

3.2.3 Permanent Disturbance Areas

Areas of permanent disturbance will be limited to that required for the construction of to the solar arrays, onsite substation, energy storage facility, permanent access roads and the poles which

would support a 0.3 mile gentie from the Project to the Gates Substation. These areas will be permanently developed but generally will not be paved or otherwise covered with impervious surfaces. These areas could provide habitat for disturbance-adapted invasive species and also encourage spread of invasive species during construction as a result of dispersal of seeds and other propagules via soil disturbance and erosion, runoff, and movement of construction personnel and equipment onto and off of the Project Site. During operation panel washing will provide an irrigation source that will support weed establishment and growth.

In addition to developed areas of the site, implementation of the Project is likely to create peripheral areas that are permanently altered such that weed establishment is favored. This may include soils that have been cleared, compacted, or otherwise disturbed; areas where hydrology is altered, such as from increased drainage from developed areas; or areas where continued vehicle or foot traffic persist. Ongoing weed management will include survey and implementation of weed control measures in these areas to prevent establishment of areas of weed seed reservoirs.

3.2.4 Weed Management Measures

Staff Training, Monitoring and Surveys

Prior to and during construction and as part of ongoing site maintenance, landscaping and vegetation on the Project Site will be managed and maintained to reduce weed dispersal, reduce fire risk, and avoid impacts to neighboring agricultural operations. A site survey will be undertaken by a qualified biologist under the direction of the ECA approximately 30 days prior to the onset of any construction activities at the Project Site. Following the site survey the biologist will submit a list of weeds present on the site to the County and to the ECA. The biologist will oversee weed control activities during site clearing and construction activities and will be responsible for inspecting construction areas, identifying the presence of weeds, and inspecting equipment cleaning facilities for weed seed removal. The ECA will be responsible for prescribing management activities consistent with this plan when weeds become established. Monitoring of construction areas and access routes will be conducted as necessary to insure proper weed control. Training in identification of common native plants and common weeds will be provided to field staff including biological monitors, weed abatement contractors, and construction and operational personnel under the direction and oversight of the biological monitor.

During construction, the ECA will be required to regularly update the list of potential weeds, and identify new potential threats. This will include developing a management strategy and management methods appropriate to the plant species and nature of the potential invasion.

Prior to commencement of Project operation, maintenance personnel will receive practical training including the importance of preventing the spread of noxious weeds, weed identification and optimal methods of control. The Project Site will be inspected routinely for weeds during Project operation and maintenance, at a frequency to be determined following consultation with the Fresno County Agricultural Commissioner’s office.

Where weed infestation occurs, and treatment is implemented, the area will be targeted for ongoing monitoring to ensure that treatments are effective and that complete eradication has been

achieved. Visits to known infestation areas will continue until weeds in the area are controlled Locations of weed occurrences, with data on species, detection date, growth stage, infestation extent, treatments implemented, results of treatment, and current status will be maintained during the construction and operation phases. A geographic information system (GIS) will be used to map and store data. The priority of infestation areas will be established based on species, vulnerability of the site to invasion, growth stage, and effectiveness of treatment.

Also included will be areas mapped as vulnerable to weed invasions. Vulnerability will be assessed on the following: (1) availability of weed propagule sources, such as along roadsides, (2) areas disturbed, such as through land clearing and earthwork; or (3) nearby areas with known prior or treated weed infestations or existing infestations that are out of the managed area.

Weed Control Approach

University of California Statewide Integrated Pest Management Plan

The University of California Statewide Integrated Pest Management Plan (UC IPM) will be implemented as part of the Project (University of California, 2017). This program provides extensive guidance for controlling weeds. The Program generally applies to weed control methods for agricultural crops or for landscaping but include many techniques that are appropriate for use as part of the development of the Project.

The UC IPM guide for landscaped areas offers the following steps that should be considered during construction to minimize later weed growth.

1. **Site assessment.** Before soil preparation and when the weeds are visible, evaluate the soil, mulch, and slope of the site so problems can be corrected or future problems anticipated before planting. Site characteristics to look for include drainage, soil compaction, shading, and water infiltration rate. Identify the weed species in the area, with particular focus on perennial weeds. The best time to look for winter annual weeds is mid- to late winter; perennials and summer annuals are easiest to identify in mid- to late summer.

2. **Site preparation.** The most often overlooked aspect of a landscape maintenance program is site preparation. Control existing weeds, especially perennials, before any grading and development are started. Glyphosate (Roundup, etc.) can be used to kill existing annual and perennial weeds. Preplant treatment with fumigants (available to licensed pesticide applicators only) or soil solarization can be used if time allows; however, six. weeks are required for solarization and it is most effective when done during the time of highest sun radiation-from June to August in California. Annual weeds can be reduced by irrigating the area after final grading, allowing the weeds to emerge. While the weeds are still small, a shallow cultivation (less than one inch), scraping the weeds off the soil, or spraying with a postemergent non-selective herbicide and then repeating this process of irrigation, emergence, and removal two or three times will greatly reduce annual weed competition and population.

3. **Don't introduce weeds**. Weeds are sometimes introduced in the soil brought to the landscape site either when amending the soil or in the potting mix of transplants.

4. **Encourage rapid establishment of desired plants.** Use the best management practices to get the plants established as quickly as possible so that they become competitive with weeds and

more tolerant of herbicides applied to the site. Handweeding and keeping weeds from producing seeds in the landscape will greatly reduce overall weed populations.

Non-Herbicide Weed Control

Weed management practices will include control of combustible vegetation on and around the Project Site boundary, grazing or mowing of ground cover under the arrays, and appropriate disposal of any organic and inorganic materials used in facility maintenance. Per Fresno County policy and in adherence to the County's Solar Guidelines, the solar panels will be setback a minimum of 50 feet from the property line and neighboring agricultural operations. Buffer areas will also be managed and maintained to reduce impacts to neighboring sites. To the extent practicable, monitoring, prevention and mechanical methods of noxious weed removal will be utilized as a priority management strategy to minimize the use of chemical herbicides, which can compromise soil, water, and air quality. In addition to adherence to the approach set out in the UC Davis Plan, a number of specific weed control actions will be implemented.

1. Soil will be managed by limiting ground disturbance to the minimum feasible and implementing dust suppressants to minimize the spread of seeds. Cleared vegetation and salvaged topsoil will be stockpiled adjacent to the area from which they are stripped to eliminate the transport of soil-borne noxious weed seeds, roots, or rhizomes. Dust palliatives (e.g. water) will be used during construction to minimize the spread of airborne weed seeds, especially during very windy days Maintenance of a non-irrigated cover of perennial grasses and herbaceous vegetation to reduce the amount of exposed bare soil that could otherwise become colonized by invasive plant species.

2. Any straw or hay bales used for sediment barrier installations will be obtained from sources that are certified free of primary noxious weeds. Other products such as gravel, mulch, and soil, may also carry weeds. Such products will be obtained from suppliers who can provide certified weed-free materials. Where feasible, mulch will be generated from native vegetation cleared from the Project Site. Soil will not be imported onto the Project Site.

3. Where possible, mechanical methods (mowing or grazing) will be used to keep vegetation low without discing or tilling. Herbicides will be used selectively (see below for more details).

4. Areas of disturbance such as roadsides and construction staging areas may become susceptible to colonization of disturbance-adapted weed species. The site's primary access routes will be graded and graveled, however the shoulders of these routes will require regular maintenance, such as mowing. Additionally, regular maintenance of the solar arrays will include the use of water which could encourage growth of weeds under and around the panels. These areas will also require regular mowing or other weed abatement prior to seed ripening in order to optimally reduce the propagation of undesirable species.

5. During construction and operation of the Project, vehicles will access the site and may inadvertently introduce weed seeds to the site. Therefore, an on-site vehicle cleaning and inspection station is needed for earthmoving equipment to limit the introduction and spread of propagules on site and to neighboring areas. Cleaning stations will use either high pressure water or air to remove dirt and mud from equipment and vehicles and will be located away from any sensitive biological resources. To prevent the spread of weed species into new habitats, construction equipment will be cleaned of dirt and mud that could contain weed

seeds, roots, or rhizomes. Prior to entering the Project work areas, equipment will be inspected to ensure they are free of any dirt or mud that could contain weed seeds. The tracks, feet, tires, and undercarriage will be carefully washed, and special attention will be paid to axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Other construction vehicles (e.g. pick-up trucks) that will be frequently entering and exiting the site will be inspected and washed on an as-needed basis. All vehicles will be washed off and vehicles will not need to travel off-pavement to reach the work area.

Herbicide Weed Control

To specifically target the control and removal of invasive weeds, herbicides will be selectively used at the Project Site. Chemical herbicides will be selected as a management option while considering such factors as: impact on natural enemies and pollinators, potential for water quality problems, impact of aquatic vertebrates (if applicable), chemical mode of action (to decrease probability of pesticide resistance), and following an understanding of rare and endangered species that could be present on site. If rare or endangered species are identified through pre-construction surveys, avoidance measures will be stipulated and followed such that no rare species are inadvertently impacted by herbicide applications. Careful application of chemical substances will occur according to the following additional provisions:

Oversight of Herbicide Use

- The Project owner will hire a specialist pest and weed consultant if recommended by the County.
- A licensed herbicide applicator will conduct or oversee all herbicide use and storage at the Project Site.
- Applicators will wear personal protective equipment as described on the product labels.

Herbicide Application

- All herbicides selected will be those approved by the state of California and in Fresno County for the control of weeds. Application will comply with all necessary regulations set forth by the U.S. Environmental Protection Agency and the California Department of Pesticide Regulation.
- If application is necessary within two months of sheep grazing on or near the Project Site, the sheep operator will be consulted to confirm that the herbicide type and the timing of application will not result in a detrimental impact on sheep.
- Application will not occur when wind speeds exceed 10 miles per hour. If visible drift is noted during an herbicide application, the application will cease until meteorological conditions improve.
- Herbicides will target specific weed species only.

Herbicide Storage

- A locked container will be used to store all herbicides when not in use.
- Storage of herbicides will closely adhere to label instructions.

CHAPTER 4
Vertebrate Pests

4.1 Overview

Wildlife in California is a public resource, and as such is afforded protection under state and/or federal laws. Prior to beginning any vertebrate pest management program, the federal and/or state status of the target species and any other species that may be inadvertently affected by the program must be determined. The legal status of the species will influence the chosen management technique, be it lethal, non-lethal, biological, chemical or an integrated pest management approach. Understanding and complying with the laws at the local, state, and federal levels involving appropriate use, storage, disposal and record-keeping for pesticides used in vegetative or vertebrate pest control is essential. The use of pesticides in a manner not consistent with label instructions can increase risks to non-target species, result in less effective control, compromise safety and increase costs. Improper use can also result in fines and other risks.

Vertebrate pests include ground squirrels, rats, mice, voles, gophers, and other pests, all of which commonly occur in agricultural facilities in Fresno County and which can cause damage to agricultural crops. All of these species could occur on the Project Site.

The Fifth Standard site is primarily under active cultivation or is cleared fallow land (ESA, 2016b). No vertebrate pest species were noted on the site during field surveys (ESA, 2016b). However, as the site will not be regularly tilled during construction and once the Project is operational vertebrate pest species could establish a presence on the site.

4.2 Descriptions of Vertebrate Pests

The University of California (2017) Agricultural and Natural Resources Statewide Integrated Pest Management Program has provided the following information specific to agricultural non-predator vertebrate pests. Additional details are provided in Appendix A.

> **California Ground Squirrel.** California ground squirrel (*Otospermophilus beecheyi*) is found throughout California, except desert habitats. It inhabits natural rangeland, pastures, orchards, ditch banks, foothill slopes with scattered trees, open lands, rock outcroppings. Ground squirrel colonies left uncontrolled can damage many food-bearing and ornamental plants. Particularly vulnerable are grains as well as nut and fruit trees such as almond, apple, apricot, orange, peach, pistachio, prune, and walnut. Ground squirrels will enter gardens and devour vegetables in the seedling stage. They can damage young shrubs, vines, and trees by gnawing bark, girdling trunks (the process of

completely removing a strip of bark from a tree's outer circumference), eating twigs and leaves, and burrowing around roots. Ground squirrels will gnaw on plastic sprinkler heads and irrigation lines. Burrowing can be quite destructive. Burrows and mounds make it difficult to mow, and they present hazards to machinery, pedestrians, and livestock. Burrows around trees and shrubs can damage and desiccate, or dry out, roots; it sometimes can topple trees. Burrowing beneath buildings and other structures sometimes produces damage that necessitates costly repair.

The control procedure selected depends heavily upon the unique life cycle and behavior of the ground squirrel. Baiting with treated grain is effective in summer and fall, because squirrels primarily feed on seeds during this period. Fumigation is most effective in spring when moist soil helps seal gasses in the burrow system. Fumigating at this time also is more effective, because squirrels die before they can reproduce.

Pocket gophers. Pocket gophers, often called gophers, *Thomomys* species, are burrowing rodents that get their name from the fur-lined, external cheek pouches, or pockets, they use for carrying food and nesting materials. Pocket gophers are well equipped for a digging, tunneling lifestyle with their powerfully built forequarters; large-clawed front paws; fine, short fur that doesn't cake in wet soils; small eyes and ears; and highly sensitive facial whiskers that assist with moving about in the dark. A gopher's lips also are unusually adapted for their lifestyle; they can close them behind their four large incisor teeth to keep dirt out of their mouths when using their teeth for digging.

Pocket gophers often invade yards and gardens, feeding on many garden crops, ornamental plants, vines, shrubs, and trees. A single gopher moving down a garden row can inflict considerable damage in a very short time. Gophers also gnaw and damage plastic water lines and lawn sprinkler systems. Their tunnels can divert and carry off irrigation water, which leads to soil erosion. Gophers are typically controlled in agricultural environs by trapping and/or by using poison baits

Rats. Rats, Norway rats (*Rattus norvegicus*), and roof rats (*R. rattus*), are some of the most troublesome and damaging rodents in the United States. They eat and contaminate food and animal feed, damage structures, property and feed containers and packaging, and transmit parasites and diseases to other animals and humans. Rats live and thrive in a wide variety of climates and conditions and are often found in and around homes and other buildings, on farms, and in gardens and open fields.

Both rat species cause problems by gnawing on electrical wires and wooden structures such as doors, ledges, comers, and wall material, and can tear up insulation in walls and ceilings for nesting. Norway rats can undermine building foundations and slabs with their burrowing activities and can gnaw on all types of materials, including soft metals such as copper and lead, as well as plastic and wood.

Among the diseases which rats can transmit to humans or livestock are murine typhus, leptospirosis, salmonellosis (food poisoning), and rat bite fever. Plague is a disease that

both roof and Norway rats can carry, but in California it is more commonly associated with ground squirrels, chipmunks, and native woodrats.

A successful rat control strategy typically includes three elements: sanitation measures; building construction and rodent proofing; and, if necessary, population control.

House mice. The house mouse, *Mus musculus*, is one of the most troublesome and costly rodents in the United States. House mice thrive under a variety of conditions; they are found in and around homes and commercial structures as well as in open fields and on agricultural land. House mice consume and contaminate food meant for humans, pets, livestock, or other animals. In addition, they cause considerable damage to structures and property, and they can transmit pathogens that cause diseases such as salmonellosis, a form of food poisoning.

Because house mice are so small, they can gain entry into homes and other buildings much more easily than rats. As a result, house mouse infestations are probably 10 to 20 times more common than rat infestations. Effective control involves sanitation, exclusion, and population reduction. Sanitation and exclusion are preventive measures. When a mouse infestation already exists, some form of population reduction such as trapping or baiting is almost always necessary. The key to successful long-term mouse control is limiting shelter and food sources wherever possible. Trapping works well, especially when a sufficient number of traps are placed in strategic locations. Trapping also can be used as a follow-up measure after a baiting program. When considering a baiting program, decide if the presence of dead mice will cause an odor or sanitation problem. If so, trapping may be the best approach. After removing mice, take steps to exclude them so that the problem does not recur. Several types of rodenticides are available, which can be purchased as ready-to-use baits that typically are labeled for use against only house mice, Norway rats and roof rats. Because all rodenticides are toxic to humans, pets, and wildlife, take special precautions to prevent access to baits by children and nontarget animals.

Voles: Six species of voles from the genus *Microtus* occur in California. Collectively they are called either meadow mice or voles. Two species are responsible for the majority of damage. The California vole, *M. californicus*, is the most widespread vole in the state, found in the Owens and Central valleys and nearly the entire length of the coastal range. The montane vole, *M. montanus,* inhabits northeastern California and the eastern Sierra slope.

Voles cause damage by feeding on a wide range of garden plants including artichoke, beet, Brussels sprouts, cabbage, carrot, cauliflower, celery, lettuce, spinach, sweet potato, tomato, and turnip. They also can damage turf and other landscape plantings such as lilies and dichondra. Voles will gnaw the bark of fruit trees including almond, apple, avocado, cherry, citrus, and olive.

To prevent vole damage, the population needs to be managed before it reaches high numbers. This can be done by removing or reducing the vegetative cover, making

the area unsuitable to voles. Removing cover also makes detecting voles and other rodents easier. Once vole numbers begin to increase rapidly, the damage they do to ornamental and garden plants and to trees can be quite severe. Populations can also be managed by excluding voles with wire fences, installation of tree protection measures, trapping, baiting and use of repellants.

4.3 Pest identification

One of the keys to controlling vertebrate pest damage in crops is prompt and accurate determination of which species is causing the damage. Prior to the onset of construction at the Project Site, the biological monitor will survey the site to identify signs of pest activity such as: trails, runs, tracks and tail marks, droppings, burrows, nests and food caches, tooth marks and location of damage on trees and shrubs. Positive species identification will also be made via one or more of the following methods.

Trapping: Live traps or snap traps of an appropriate size can be used to identify smaller rodent species. Traps can also assist in determining population densities, obtaining reproductive data, and censoring a pest population in an area before and after a control program to evaluate the control results. Trap line procedures used in crops are discussed below. Trapping will be undertaken by the biological monitor and/or a licensed pest control contractor.

To ensure worker safety, precautions will be taken during any trapping activities in compliance with California disease control regulations (CDHS, 1993). Further detailed information is obtainable at the Center for Disease Control. Wild rodents can be reservoir hosts of diseases transmissible to humans, including a frequently lethal strain of Hantavirus. Precautions will therefore be taken when trapping small rodents. If possible, snap (kill) trap methods will be employed. Protective clothing will be worn while trapping, including rubber or latex gloves, particulate masks, and coveralls (or other work clothing). Eating, drinking or smoking will not be allowed during trapping activities. Trapping operators will apply insect repellent, as necessary, in areas with mosquito, flea, and tick problems and will handle carcasses appropriately to decrease risk of infection.

If live trapping of rodents is necessary, special precautions will be considered. Persons involved with extensive handling of rodents will have a baseline serum sample drawn (store at -20C), preferably at the time of employment. Any workers who develop a febrile or respiratory illness within 45 days of the last exposure will seek medical attention immediately and inform the attending physician of the potential occupational risk of rodentbome infection (e.g.), hantavirus pulmonary syndrome, plague, etc.). In addition to the protective measures described for snap trapping, workers will wear a half-mask airpurifying (or negative-pressure) respirator with a high-efficiency particulate air (HEPA) filter or a powered air-purifying respirator (PAPR) with HEPA filters when handling live rodents, including removing them from traps. Respirators (including positive-pressure types) are not considered protective if facial hair interferes with the face seal, since proper fit cannot be assured. Respirator practices will follow a comprehensive user program, be supervised by a knowledgeable person, and be in compliance with Cal/OSHA regulations.

4.4 Preventative Controls

Preventive controls will be used to prevent rodents from inhabiting the Project Site. This will be achieved as follows:

- Vegetative cover will be managed on the Project Site with the objective of keeping the site free of weeds and vegetation that could provide cover and food for vertebrate pests. In order to make the site less attractive to rodents, invasive vegetation growth will be controlled. No potential food sources will be present in the array area, and the panels will not provide cover for rodent nests. Weed management efforts will support hunting habitat for predator species (e.g. raptors) by ensuring vegetation does not grow too tall to limit visual spotting of or access to prey.

- During construction, proper sanitation disposal will be implemented to reduce the potential attraction of pests. The construction contractor will provide trash enclosures and contract with an approved trash hauler to prevent the buildup of waste onsite

- Vertebrate pest management will be incorporated as part of a mandatory site training for construction, operation and maintenance personnel. Training will include species identification and the impacts on agriculture. Training will also cover the importance of preventative controls and safety precautions for rodenticide use (discussed below).

- Monitoring and selective placement of rodent traps will be undertaken to prevent the establishment of large populations, particularly along perimeter roads and any raised banks/berms. In the event that rodents are detected by the monitoring system, the Project owner shall use rodenticides, traps, or other method recommended by the Fresno County Agricultural Commissioner or the pest control professional.

- Maintenance personnel will conduct monthly site inspections of bait stations if utilized and provide annual reports documenting the results of such inspections for the Fresno County Agricultural Commissioner's office. Rodenticide use will be tracked and reported consistent with recommendations of the USDA County Agricultural Extension staff and other county requirements.

- The Project Site could potentially support special status wildlife species during operation and maintenance; pest management measures will be implemented to ensure that pests will be controlled without adverse effects on sensitive wildlife species.

- Efforts to limit the establishment and spread of non-native invasive vegetation, combined with appropriate containment and disposal of onsite wastes, supports overall deterrence of possible vertebrate pest species. In turn, best practice efforts also minimize transmission of diseases to neighboring properties. Methods and maintenance will be periodically reevaluated and adaptively managed to ensure ongoing effectiveness of the measures. EC&R will consult with the Fresno County Agricultural Commissioner and USDA County Agricultural Extension staff on the most appropriate vertebrate pest management strategies in the event that potential control strategies prove to be ineffective.

4.5 Management and Suppression Controls

In the event that monitoring detects the presence of vertebrate pests on the Project Site, eradication and suppression methods will be implemented to control populations. Additional pest management may include trapping, eradication with registered wildlife management professionals, and use of Environmental Protection Agency-approved rodenticides in accordance with all labeling instructions.

4.5.1 Use of Rodenticides

Pre-Treatment Considerations

- Prior to use of rodenticides this Plan will be provided to the California Department of Fish and Wildlife regarding hazards to threatened and endangered species as specified in the Joint Policy Statement of the California Department of Food and Agriculture, California Department of Fish and Wildlife, and the California Agricultural Commissioners Association Regarding Threatened and Endangered Species.

- Actual damage or threat of damage must be sufficient to warrant application of rodent baits. As a safeguard to humans and domestic animals, alternative methods such as fumigants or anticoagulant baits in bait stations will be considered around inhabited buildings, suburban areas and domestic animals.

- Baiting will not be undertaken unless tests indicate satisfactory bait acceptance occurs in areas to be treated. Bait will be chosen on the basis of selectivity as well as acceptance value. Before rodenticides are used, acceptance tests will be conducted to indicate the degree of bait acceptance that can be expected. If bait acceptance is good, most of the bait will be quickly consumed by rodents during a 24-hour period. If acceptance is poor, toxic bait should not be used. Too frequent application of acute toxic baits, like zinc phosphide, which is recommended because of a proven lower risk to kit fox, may cause bait and poison shyness. Unlike insecticides, which are generally applied to the crop itself, rodent baits are commonly placed in rodent burrows or applied to trails or areas where rodents naturally feed. Rodent baits will not be applied in any manner that will contaminate food or feed crops. This will include any application method which will cause the bait to lodge in food plants.

Treatment

- Prior to application of treatment the County Agricultural Commissioner will be advised of conditions at the site of application and in a position to direct and control the manner in which the application is made.

- Treatment will be applied by a licensed pest contractor.

- Toxic baits used in control operations shall be artificially colored or dyed.

- Quantities of toxic bait exposed shall be regulated so that residual bait will be low to minimize a hazard to nontarget species.

- Property owners or tenants shall be advised to dispose of rodent carcasses on the ground surface immediately adjacent to inhabited areas. A shovel should be used to minimize possible contact with ectoparasites and diseases

Prior to and during the time of application use of rodenticides shall be posted in accordance with county policy, as prescribed by the California Penal Code, Section 596. Signs will be located at intervals of distance not greater than one-third of a mile apart and in any case not less than three such signs having words with letters at least one-inch high reading "Warning- Poison Bait Placed out on these Premises".

- All accidentally spilled grain bait shall be cleaned up immediately and discarded or used containers shall be disposed of in accordance with California laws and regulations pertaining to disposal of pesticide containers.

Post Treatment

Following rodenticide use an annual written evaluation will be made of representative areas describing the degree of control and any observed effects on nontarget wildlife

The safe handling, storage and use of rodenticides is the responsibility of the applicator. The applicator will adhere to the following at all times.

- All bags, sacks or other containers shall have the product label attached. All containers of bait other than the original labeled container (service container) shall be labeled with the precautionary statement that applies (i.e., danger, warning or caution), the name of the toxicant and name and address of responsible party. This includes bait stations.

- Toxic baits and concentrates shall be stored in an adequately locked space at all times when not in use. Such space shall be entirely separate from where food or drink for humans or domestic animals is kept stored.

- All persons handling toxic baits or concentrates should be advised as to:

  – The characteristics of these materials.

  – The necessity of using adequate protective clothing and devices such as gloves and/or bait spoons for dispensing baits.

  – The necessity for keeping all skin abrasions and cuts adequately protected.

  – The possibility of inadvertent poisoning of wildlife and domestic animals by improper bait exposure.

  – The symptoms of poisoning and recommended first aid if such symptoms occur.

- To prevent the accidental bait spillage, containers should be so designed and in such repair that leakage or spillage does not occur.

- Toxic bait accidentally spilled should be immediately and thoroughly cleaned up.

- Containers of bait shall not be left unattended or accessible to children, irresponsible persons or animals.
- Unused bait and empty bait containers shall be disposed of according to label directions.
- Operators shall wash hands with soap and water after handling poison baits and before eating or smoking.

4.6 Disease Management

Due to the nature of Project operations, the Project Site will not be a likely source or transmitter of diseases that could adversely impact surrounding agricultural activities. However, the Project owner will consult with the Fresno County Agricultural Commissioner and local USDA County Agricultural Extension staff on disease management to ensure that operation of the Project does not contribute to disease generation or pathogen transmission in Fresno County.

CHAPTER 5
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Appendix A
Vertebrate Pests

GROUND SQUIRREL

Integrated Pest Management for Home Gardeners and Landscape Professionals

Ground squirrels are troublesome pests for homeowners and gardeners. The California ground squirrel, *Spermophilus beecheyi*, (Fig. 1) is the most common species in gardens. This squirrel's habitat includes nearly all regions of California except for Owens Valley, located in the southeastern part of the state, southward into the desert regions.

IDENTIFICATION

It is easy to identify ground squirrels, since they forage aboveground near their burrows. Their body measures 9 to 11 inches, while their semibushy tail adds another 5 to 9 inches in length. Their fur is brownish gray and speckled with off white along the back; the sides of the head and shoulders are light gray to whitish. One subspecies that inhabits most of Northern California has a dark, triangular-shaped patch on its back between the shoulders; this patch is missing from other species.

Although ground squirrels look similar to tree squirrels and can climb trees, when frightened they always will retreat to a burrow, whereas tree squirrels will climb a tree or tall structure and never use a burrow.

BIOLOGY AND BEHAVIOR

Ground squirrels live in a wide variety of natural habitats but usually avoid thick chaparral, dense woods, and wet areas. Populations can be particularly high in grazed rangelands and in areas disturbed by humans such as road or ditch banks, fencerows, around buildings, and in or bordering many crops.

Ground squirrels live in a burrow system where they sleep, rest, rear young, store food, and avoid danger. The burrow openings (Fig. 2) are about 4 inches in diameter but can vary considerably. The burrows can be 5 to 30 feet or more in length and can extend 2 to 4 feet below the soil surface. Often there is more than one opening in a burrow system. Ground squirrels live in colonies that can include several dozen animals in a complex of burrows. More than one squirrel can live in a burrow.

Ground squirrels are active during the day, mainly from midmorning through late afternoon, especially on warm, sunny days. Ground squirrels have two periods of dormancy during the year. During winter months most ground squirrels hibernate, but some young can be active at this time, particularly in areas where winters aren't severe. During the hottest times of the year most adults go into a period of inactivity, called estivation, that can last a few days to a week or more. During these periods, the burrow appears open at the entrance, but the squirrel plugs it with soil near the nest.

Ground squirrels breed once a year, averaging 7 to 8 per litter. Timing of breeding varies with location. In Southern California breeding begins in December, in the Central Valley the timeframe is February through April, and in the mountain ranges breeding begins somewhat later. Aboveground activity by adults is at a maximum at the height of the breeding season. The young are born in the burrow and grow rapidly. When they are about 6 weeks old, they usually emerge from the burrow. At 6 months they resemble adults.

Ground squirrels are primarily herbivorous, and their diet changes with the season. After emerging from hibernation, they feed almost exclusively on green grasses and herbaceous plants.

Figure 1. California ground squirrel.

Figure 2. California ground squirrel burrow openings.

When annual plants begin to dry and produce seed, squirrels switch to seeds, grains, and nuts and begin to store food. Ground squirrels usually forage close to their burrows. Their home range typically is within a 75-yard radius of their burrow.

DAMAGE

Ground squirrels damage many food-bearing and ornamental plants. Particularly vulnerable are grains as well as nut and fruit trees such as almond, apple, apricot, orange, peach, pistachio, prune, and walnut. Ground squirrels will enter gardens and devour vegetables in the seedling stage. They can damage young shrubs, vines, and trees

by gnawing bark, girdling trunks (the process of completely removing a strip of bark from a tree's outer circumference), eating twigs and leaves, and burrowing around roots.

Ground squirrels will gnaw on plastic sprinkler heads and irrigation lines. They also eat the eggs of ground-nesting birds and can limit attempts to attract quail to the yard.

Burrowing can be quite destructive. Burrows and mounds make it difficult to mow, and they present hazards to machinery, pedestrians, and livestock. Burrows around trees and shrubs can damage and desiccate, or dry out, roots; it sometimes can topple trees. Burrowing beneath buildings and other structures sometimes produces damage that necessitates costly repair.

Ground squirrels can harbor diseases harmful to humans, particularly when squirrel populations are numerous. A major concern is bubonic plague transmitted to humans by fleas that the squirrels carry. Ground squirrels are susceptible to plague, which has wiped out entire colonies. If you find unusual numbers of squirrels or other rodents dead for no apparent reason, notify public health officials. Do not handle dead squirrels under these circumstances.

LEGAL STATUS

The California Fish and Game Code classifies ground squirrels as nongame mammals. An owner or tenant can control, in any legal manner, nongame mammals that are injuring growing crops or other property; tree squirrels, on the other hand, are classified as game animals and have a hunting season.

No license is required if it is the owner or tenant who is taking ground squirrels that are causing damage. A trapping license from the California Department of Fish and Game is required for those who are trapping squirrels for hire or profit.

The U. S. Fish and Wildlife Service classifies the Mohave ground squirrel, *S. mohavensis*, and the San Joaquin antelope squirrel, *Ammospermophilus nelsoni*, as threatened species; therefore both are protected animals. Although you are unlikely to misidentify either of these relatively small squirrels as the much larger California ground squirrel, their ranges could overlap in some areas.

The endangered San Joaquin kit fox (*Vulpes macrotis mutica*), several endangered species of kangaroo rats, the riparian brush rabbit (*Sylvilagus bachmani riparius*), the riparian wood rat (*Neotoma fuscipes riparia*), and some endangered amphibians and reptiles also are within the California ground squirrels' range, so some squirrel control techniques could impact them as well. Before using pesticides for ground squirrel control, read the product label to determine if any restrictions exist on rodent control within the ranges of these and other endangered and protected animals. Also, if the kit fox is found in your county, contact your county agricultural commissioner for additional information; for a range map, see the California Department of Pesticide Regulation's Web site listed in References.

MANAGEMENT

The control procedure you select depends heavily upon the unique life cycle and behavior of the ground squirrel. For example, baiting with treated grain is effective in summer and fall, because squirrels primarily feed on seeds during this period. Fumigation is most effective in spring when moist soil helps seal gasses in the burrow system. Fumigating at this time also is more effective, because squirrels die before they can reproduce. Table 1 shows the yearly activities of the California ground squirrel and times when baiting, trapping, and fumigation are most effective.

Table 1.

When to Use Specific Controls Based Upon Activity Periods and Food Sources of the California Ground Squirrel.

	Winter	Spring	Summer	Fall
Major activity periods				
Adult				
Reproduction				
Juveniles				
Major food sources				
Green forage				
Seeds				
Best time for control				
Fumigation				
Baiting				
Trapping				

Trapping

Traps are practical for control when squirrel numbers are low to moderate. Live-catch traps aren't recommended, because they present the problem of how to dispose of the animals. Because ground squirrels carry diseases and are agricultural pests, the California Fish and Game Code specifies it is illegal to release them elsewhere without a written permit.

There are several types of traps that kill ground squirrels, including box traps, tunnel traps, and Conibear traps. For box (Fig. 3) and tunnel (Fig. 4) traps, place them on the ground near squirrel burrows or runways, and bait them with walnuts, almonds, oats, barley, or melon rinds. Place the bait well behind the trigger or tied to it.

After you bait the traps, don't set them for several days, so the squirrels become accustomed to them. After the squirrels are used to taking the bait, rebait and set the traps.

To reduce hazards to children, pets, poultry, and nontarget wildlife, place box-type traps in a covered box with a 3-inch diameter entrance. Put the box near active burrows with signs of recent diggings. Inactive burrows will be filled with leaves or old straw or have cobwebs across the entrance.

The Conibear trap No. 110 with a 4 1/2- by 4 1/2-inch jaw spread also is an effective kill trap (Fig. 5). You can bait the wire trigger, but usually you'll want to leave it unbaited. Place the trap directly in the burrow opening, so the squirrel must pass through it, tripping the trigger.

It might be necessary to use soil to partially fill in the burrow entrance around the outer edges of the trap to prevent the squirrel from slipping around the outside of the trap. Closing all other burrows with soil might hasten success by directing the squirrel to the remaining open burrow, which contains the trap. Attach the Conibear trap to a stake to prevent a scavenger from carrying off both it and the squirrel. With this type of trap, leaving the trap baited but unset has little effect on trapping success.

Inspect traps at least once a day, and remove dead squirrels. Don't handle the carcasses without protective gear; you can use a plastic bag slipped over each hand and arm as a glove. Once you have removed the squirrel from the trap, hold the animal with one hand and turn the bag inside out while slipping it off your arm and hand. If possible, keep small children and pets out of the area while traps are in use. In kit fox areas, spring all Conibear traps before nightfall and reset them the following morning.

Fumigation

Fumigation is a relatively safe method of control. As with any pesticide, read and follow label instructions with particular regard for nontarget species and safety factors. Some fumigants can produce flames, creating a fire danger. Don't use these types fumigants where a significant fire hazard exists, such as near buildings, dry grass, or other flammable materials. To prevent fumes from accumulating in enclosed areas, never fumigate beneath buildings or in burrows that might open beneath occupied buildings.

Be aware of the signs of nontarget species inhabiting inactive ground squirrel burrows. Kit foxes will use an old burrow, enlarging the opening, and often creating a keyhole-shaped entrance. Active pupping dens might contain prey remains, droppings, and matted vegetation and show signs of fresh paw prints. The burrowing owl (*Athene cunicularia*) is another potential occupant of abandoned ground squirrel burrows. Don't treat a burrow if you suspect a nontarget animal is present. Fumigate only active ground squirrel burrows; county agricultural commissioners (www.cdfa.ca.gov/exec/county/county_contacts.html) can provide additional information on how to recognize these.

Many county agricultural commissioners' offices sell United States Department of Agriculture gas cartridges, which are designed for fumigating burrowing rodents. Other types of fumigation cartridges also are available at retail outlets (Fig. 6). Fumigation is

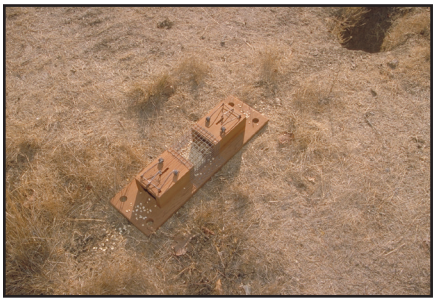

Figure 3. A pair of box-type gopher traps baited and set in a ground squirrel runway.

Figure 4. The tunnel-type trap kills animals that pass through it.

Figure 5. To use a Conibear trap, dig a slice of soil from the entrance so the trap will fit flush to the edges of the burrow entrance.

Figure 6. Inserting a fumigation cartridge into a burrow.

most effective in spring or other times when soil moisture is high, which helps contain the gas within the burrow system. Don't fumigate in summer or when the soil is dry, because the gas more readily diffuses into small cracks present in dry soil, making it less effective. Don't fumigate during hibernation, because the squirrel plugs its burrow with soil, preventing fumes from reaching the nest chamber; you can't see this plug by examining the burrow entrance.

Treat all active burrow systems when fumigating. When using a USDA gas cartridge, puncture the end with a nail or screwdriver at the points marked, and rotate the nail to loosen the material inside. Insert the fuse into the center hole. Place the cartridge in the burrow as far as possible, and light the fuse. With a shovel handle or stick, push the lighted cartridge down the burrow, and quickly seal the opening with soil, tamping it down. Fill in connected burrows if you see smoke escaping. Larger burrow systems usually require 2 or more cartridges placed in the same or connecting burrow openings. After 24 hours, check for reopened burrows, and re-treat as needed.

Toxic Baits

Anticoagulant baits, available at some county agricultural commissioners' offices and retail outlets, can control ground squirrels. The squirrel must eat the anticoagulant in several feedings during a period of 5 or more days in order for it to be effective. Because of this feature and because an antidote, vitamin K_1, exists, this bait is relatively safe for use around humans and pets. However, keep pets out of treated areas, check the areas daily, and remove and dispose of any carcasses. Dogs are more likely to eat the palletized, cereal-based baits than the loose grain baits, plus pelletized baits are prohibited in kit fox areas.

You can use anticoagulant baits in bait boxes or use repeated spot baiting or spot broadcasting, a method that involves spreading the poison near active ground squirrel burrows without leaving it in a pile. Bait boxes are small structures that the squirrel must enter in order to eat the bait. Boxes contain sufficient bait for repeated feedings. They are the preferred baiting method around homes and other areas where children, pets, and poultry are present. Follow all product label requirements for applying baits in bait boxes or by spot broadcast.

Unless a bait label specifies otherwise, you can construct bait boxes from any durable material and in a variety of designs. If you design a bait box, make the entrance hole(s) about 3 inches across to allow access to squirrels but not to larger animals. Construct a lip to prevent bait from spilling out of the box when squirrels exit. These boxes must be tamper-resistant, meaning small children must not be able to access the contents. You can do so by putting a lock on the box or devising some other method that will make it difficult for children to open. Secure the bait box, so it can't be turned over or easily removed. A self-feeding arrangement ensures the pest gets a continuous supply of bait. Never fill a bait box with more than 5 pounds of bait.

Place bait boxes near runways or burrows. If squirrels are present over a large area, space the boxes at 100- to 200-foot intervals. Initially, inspect bait stations daily, adding bait as needed. Increase the amount of bait if squirrels have eaten it all by the end of the day. Fresh bait is important, so replace moldy or old bait. It can take several days before squirrels become accustomed to the bait box and enter it.

Anticoagulant baits generally require 2 to 4 weeks or more to be effective. Continue baiting until all feeding ceases, and you no longer see any squirrels. Although few ground squirrels will die aboveground, you should pick up and dispose of those that do as described above in the Trapping section and in accordance with label directions. Also be sure to pick up and dispose of unused bait, according to label instructions, upon completion of the control program.

Habitat Modification

You'll generally find ground squirrels in open areas, although they sometimes use available cover. Remove brush piles and debris to make an area less desirable. This also aids in detecting squirrels and their burrows and improves access during control operations.

Ground squirrels can reinvade a site by moving into vacant burrows. Destroy old burrows by deep ripping them to a depth of at least 20 inches, using a tractor and ripping bar(s). Simply filling in the burrows with soil does not prevent reinvasion, as ground squirrels easily find and reopen old burrows.

Other Control Techniques

Shooting squirrels with a .22 rifle can provide some control, but it is very time consuming. Shooting is recommended only when you can do it safely and you are in a rural location where squirrel numbers are very low. There are no effective "frightening" devices or repellents that will cause ground squirrels to leave their burrows or avoid an area or crop.

When using firearms to manage squirrels, don't use lead ammunition in areas within the historical California condor range. Check with your local game warden for more information regarding these areas, and always check local ordinances before using firearms.

Natural Control

Many predators, including hawks, eagles, rattlesnakes, and coyotes, eat ground squirrels. In most cases, predators aren't able to keep ground squirrel populations below the level at which they become pests for the home gardener. Dogs might prevent squirrels from entering small areas, but they can't control established squirrel populations.

Follow Up

For those who live next to wildlands or other areas where squirrels are common, an ongoing control program will be necessary, since squirrels will

reinvade over time. Once you have controlled ground squirrels, periodically monitor the area for reinfestation. Check for new burrows, and start control actions as soon as you notice new arrivals. It is easier and less expensive to control a small population.

More information is available at the UC Ground Squirrel Best Management Practices Web site, http://groups.ucanr.org/gsbmp/, and at the UC Vertebrate Pest Control Education Web site, http://groups.ucanr.org/vpctraining/.

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POCKET GOPHERS

Integrated Pest Management for Home Gardeners and Landscape Professionals

Pocket gophers, often called gophers, *Thomomys* species (Fig. 1), are burrowing rodents that get their name from the fur-lined, external cheek pouches, or pockets, they use for carrying food and nesting materials. Pocket gophers are well equipped for a digging, tunneling lifestyle with their powerfully built forequarters; large-clawed front paws; fine, short fur that doesn't cake in wet soils; small eyes and ears; and highly sensitive facial whiskers that assist with moving about in the dark. A gopher's lips also are unusually adapted for their lifestyle; they can close them behind their four large incisor teeth to keep dirt out of their mouths when using their teeth for digging.

IDENTIFICATION

Five species of pocket gophers are found in California, with Botta's pocket gopher, *T. bottae*, being most widespread. Depending on the species, they are 6 to 10 inches long. For the most part, gophers remain underground in their burrow system, although you'll sometimes see them feeding at the edge of an open burrow, pushing dirt out of a burrow, or moving to a new area.

Mounds of fresh soil are the best sign of a gopher's presence. Gophers form mounds as they dig tunnels and push the loose dirt to the surface. Typically mounds are crescent or horseshoe shaped when viewed from above (Fig. 2). The hole, which is off to one side of the mound, usually is plugged. Mole mounds (Fig. 3) are sometimes mistaken for gopher mounds. Mole mounds, however, are more circular and have a plug in the middle that might not be distinct; in profile they are volcano-shaped. Unlike gophers, moles commonly burrow just beneath the surface, leaving a raised ridge to mark their path.

One gopher can create several mounds in a day. In nonirrigated areas, mound building is most pronounced during spring or fall when the soil is moist and easy to dig. In irrigated areas such as lawns, flower beds, and gardens, digging conditions usually are optimal year round, and mounds can appear at any time. In snowy regions, gophers create burrows in the snow, resulting in long, earthen cores on the surface when the snow melts.

BIOLOGY AND BEHAVIOR

Pocket gophers live in a burrow system that can cover an area that is 200 to 2,000 square feet. The burrows are about 2 1/2 to 3 1/2 inches in diameter. Feeding burrows usually are 6 to 12 inches below ground, and the nest and food storage chamber can be as deep as 6 feet. Gophers seal the openings to the burrow system with earthen plugs. Short, sloping lateral tunnels connect the main burrow system to the surface; gophers create these while pushing dirt to the surface to construct the main tunnel.

Gophers don't hibernate and are active year-round, although you might not see any fresh mounding. They also can be active at all hours of the day.

Gophers usually live alone within their burrow system, except when females are caring for their young or during breeding season. Gopher densities can be as high as 60 or more per acre in irrigated alfalfa fields or in vineyards. Gophers reach sexual maturity about 1 year of age and can live up to 3 years. In nonirrigated areas, breeding usually occurs in late winter and early spring, resulting in 1 litter per year; in irrigated sites, gophers can produce up to 3 litters per year. Litters usually average 5 to 6 young.

Figure 1. Adult pocket gopher, *Thomomys* species.

Figure 2. Top view of a pocket gopher mound.

Figure 3. Top view of a mole mound.

Pocket gophers are herbivorous and feed on a wide variety of vegetation but generally prefer herbaceous plants, shrubs, and trees. Gophers use their sense of smell to locate food. Most commonly they feed on roots and fleshy portions of plants they encounter while digging. However, they sometimes feed aboveground, venturing only a body length or so from their tunnel opening.

PEST NOTES **Publication 7433**

University of California
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Burrow openings used in this manner are called "feed holes." You can identify them by the absence of a dirt mound and by a circular band of clipped vegetation around the hole. Gophers also will pull entire plants into their tunnel from below. In snow-covered regions, gophers can feed on bark several feet up a tree by burrowing through the snow.

DAMAGE

Pocket gophers often invade yards and gardens, feeding on many garden crops, ornamental plants, vines, shrubs, and trees. A single gopher moving down a garden row can inflict considerable damage in a very short time. Gophers also gnaw and damage plastic water lines and lawn sprinkler systems. Their tunnels can divert and carry off irrigation water, which leads to soil erosion. Mounds on lawns interfere with mowing equipment and ruin the aesthetics of well-kept turfgrass.

LEGAL STATUS

The California Fish and Game Code classifies pocket gophers as nongame mammals. This means if you are the owner or tenant of the premises and you find pocket gophers that are injuring growing crops or other property, including garden and landscape plants, you can control them at any time and in any legal manner.

MANAGEMENT

To successfully control gophers, the sooner you detect their presence and take control measures the better. Most people control gophers in lawns, gardens, or small orchards by trapping and/or by using poison baits.

Probing for Burrows

Successful trapping or baiting depends on accurately locating the gopher's main burrow. To locate the burrow, you need to use a gopher probe (Fig. 4). Probes are commercially available, or you can construct one from a pipe and metal rod. Probes made from dowels or sticks work in soft soil but are difficult to use in hard or dry soils. An enlarged tip that is wider than the shaft of the probe is an important design feature that increases the ease of locating burrows.

To find burrows, first locate areas of recent gopher activity based on fresh mounds of dark, moist soil. Fresh mounds that are visible aboveground are the plugged openings of lateral tunnels. You can find the main burrow by probing about 8 to 12 inches from the plug side of the mound; it usually is located 6 to 12 inches deep. When the probe penetrates the gopher's burrow, there will be a sudden, noticeable drop of about 2 inches. You might have to probe repeatedly to locate the gopher's main burrow, but your skill will improve with experience. Because the gopher might not revisit lateral tunnels, trapping and baiting them is not as successful as in the main burrow.

Trapping

Trapping is a safe and effective method for controlling pocket gophers. Several types and brands of gopher traps are available (Fig. 5). The most common type is a two-pronged, pincher trap such as the Macabee, Cinch, or Gophinator, which the gopher triggers when it pushes against a flat, vertical pan. Another popular type is the choker-style box trap.

To set traps[1], locate the main tunnel with a probe, as described above. Use a shovel or garden trowel to open the tunnel wide enough to set traps in pairs facing opposite directions (Figs. 6 and 7). Placing traps with their openings facing in opposite directions means you will be able to intercept a gopher coming from either end of the burrow. The box trap is easier to use if you've never set gopher traps before, but setting it requires more surface excavation than if you are using the pincer-type traps, an important consideration in lawns and some gardens. However, box traps can be especially useful when the diameter of the gopher's main tunnel is smaller than 3 inches, because in order to use the pincer-type traps, you will need to enlarge small tunnels to accommodate them. This can add time to the trapping process.

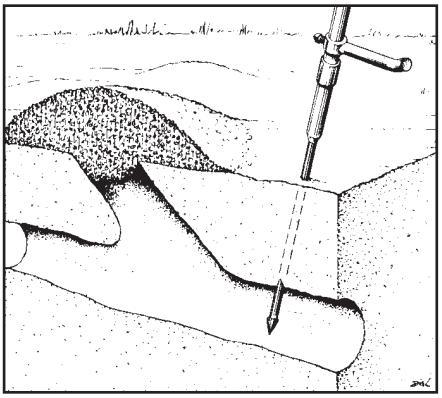

Figure 4. A gopher probe.

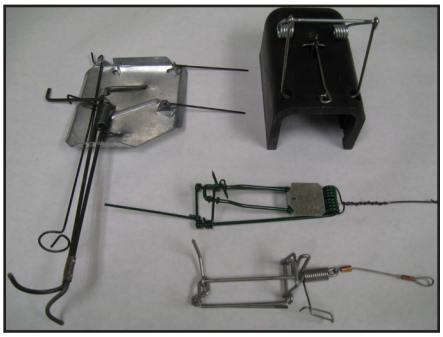

Figure 5. Types and brands of gopher traps include (clockwise from upper right) Victor Black Box, Macabee, Gophinator, and Cinch.

It isn't necessary to bait a gopher trap, although some claim baiting might give better results. You can use lettuce, carrots, apples, alfalfa greens, or peanut butter as bait. Place the bait at the back of a box trap behind the wire trigger or behind the flat pan of a pincer-type trap. Wire your traps to stakes so you can easily retrieve them from the burrow (Figs. 6 and 7).

After setting the traps, you can exclude light from the burrow by covering the opening with dirt clods, sod, canvas or landscape cloth, cardboard, or plywood. You can sift fine soil around the edges of these covers to ensure a light-tight seal. Alternatively, you can leave the trap-sets uncovered, thereby encouraging gophers to visit these trap

[1] See the online version of this Pest Note at www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7433.html to view a video on how to set a Macabee trap.

sites as they seek out these openings to plug; gophers do not like open systems.

The influence on capture success of covering versus uncovering trap-sets is unclear, although current data suggests there might be little difference. Leaving trap-sets uncovered will allow you to set traps more quickly and check them more easily. However, you always should cover sets when using box traps, since gophers likely will plug tunnels before hitting the trigger wire of these traps if you leave them uncovered.

Check traps often and reset when necessary. If you haven't captured a gopher within 2 days, reset the traps in a different location.

Baiting with Toxic Baits

The key to an effective toxic baiting program is bait placement. Always place pocket gopher bait in the main underground tunnel, not the lateral tunnels. After locating the main gopher tunnel with a probe, enlarge the opening by rotating the probe or inserting a larger rod or stick. Following label directions, place the bait carefully in the opening using a spoon or other suitable implement that you use only for that purpose, taking care not to spill any onto the ground. A funnel is useful for preventing spillage.

Often, a back-filled (plugged) tunnel—one a gopher has filled with loose dirt—will feel similar to an active tunnel. Experience is required to tell the difference. New probe users might benefit from digging down to confirm that the tunnel is active or plugged. If it is an active tunnel, you can apply bait to both of the tunnel's sides before closing it up. If it is plugged, don't treat. Once you are comfortable with your ability to accurately determine active tunnels, you can follow the standard baiting protocols described below.

Strychnine-treated grain is the most common type of bait used for pocket gopher control. This bait generally contains 0.5% strychnine and is lethal with a single feeding. Baits containing 2.0% zinc phosphide are also available. As with strychnine, these baits are lethal after a single feeding.

Multiple feeding anticoagulants are available as well. When using anticoagulant baits, you'll need to set out a large amount of bait—about 10 times the amount needed when using strychnine baits—so enough will be available for multiple feedings. Although generally less effective than strychnine baits, anticoagulant baits are less toxic. As such, they are preferred in areas where children and pets might be present. When using either type of bait, be sure to follow all label directions and precautions.

After placing the bait in the main tunnel, close the probe hole with sod, rocks, or some other material that excludes light while preventing dirt from falling on the bait. Several bait placements within a burrow system will increase success. Tamp down or clear existing mounds, so you can distinguish new activity. If new mounds appear more than 2 days after strychnine or zinc phosphide baiting or 7 to 10 days after using anticoagulant baits, you'll need to rebait or try trapping.

If gophers have infested a large area, use a hand-held bait applicator to speed treatment. Bait applicators are a combination probe and bait reservoir. Once you have located a tunnel using the probe, a trigger releases a measured amount of bait into the tunnel. Generally, strychnine bait is used with such an applicator, because it dispenses only a small quantity of bait at a time.

Fumigation

Fumigation with smoke or gas cartridges usually isn't effective, because gophers quickly seal off their burrow when they detect smoke or gas. However, fumigation with aluminum phosphide is effective at controlling gopher populations, although it is a restricted-use material. Applicators must be certified to use this material, which can limit homeowner use. Fortunately, many professional pest control operators have access to aluminum phosphide, so if trapping and baiting aren't effective, consider hiring a professional.

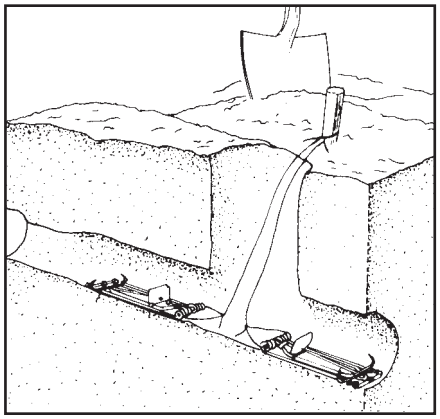

Figure 6. Macabee traps in position.

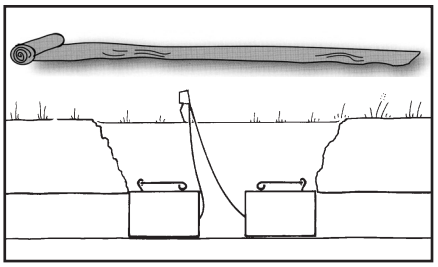

Figure 7. When putting box traps in place, cut the face of the hole smoothly, so you can push the traps tightly against the tunnels. You can cover the hole with landscape fabric, corrugated cardboard, or other material to exclude light.

Exclusion

Underground fencing might be justified for valuable ornamental shrubs or landscape trees. To protect existing plantings, bury hardware cloth or $^{3}/_{4}$-inch mesh poultry wire at least 2 feet deep with an additional 6 inches of mesh or wire bent at a 90-degree angle away from the planting. This will help keep gophers from digging around the fencing boundary. Also extend the fencing at least 1 foot aboveground to deter gophers moving overland. This method is not perfect, however, because persistent gophers can burrow below the wire; also, the wire can restrict and damage root growth of trees.

You can protect small areas such as flower beds by complete underground screening of the bed's sides and bottoms. When constructing raised vegetable or flower beds, underlay the

soil with wire to exclude gophers. To protect individual plants, install wire baskets, which you can make at home or buy commercially, at the same time you are putting the plants into the ground. If you use wire, use one that is light gauge and only for shrubs and trees that will need protection while young. Leave enough room to allow for the roots to grow. Galvanized wire provides the longest-lasting protection.

Six to 8 inches of coarse gravel 1 inch or more in diameter around underground sprinkler lines or utility cables also can deter gophers.

Natural Controls

Because no population will increase indefinitely, one alternative to a gopher problem is to do nothing, letting the population limit itself. Experience has shown, however, that by the time gopher populations level off naturally, they've already caused much damage around homes and gardens.

Predators—including owls, snakes, cats, dogs, and coyotes—eat pocket gophers. Predators rarely remove every prey animal but instead move on to hunt at more profitable locations. In addition, gophers have defenses against predators. For example, they can escape snakes in their burrows by rapidly pushing up an earthen plug to block the snake's advance. Relying solely on natural predators might not control gophers to the desired level.

Some people have tried attracting barn owls to an area by installing nest boxes. Although barn owls prey on gophers, their habit of hunting over large areas, often far from their nest boxes, and their tendency to hunt areas with abundant prey, make them unreliable for gopher control. When a single gopher, which is capable of causing damage rapidly, invades a yard or garden, a gardener can't afford to wait for an owl to arrive. It is better to immediately take effective action, usually through trapping or baiting.

Habitat Modification

Reducing gopher food sources using either chemical or mechanical methods can decrease the attractiveness of lawns and gardens to gophers. If feasible, remove weedy areas adjacent to yards and gardens to create a buffer strip of unsuitable habitat.

Other Control Methods

Pocket gophers easily can withstand normal garden or home landscape irrigation, but you sometimes can use flooding to force them from their burrows, which will enable you to use a shovel or a dog to destroy the rodent.

Gas explosive devices also are available and are somewhat effective at controlling gopher populations. These devices ignite a mixture of propane and oxygen in the burrow system. This concussive force kills the gopher and destroys the burrow system. Be sure to exercise caution when using these devices because of the potential for unintended damage to property, injury to users and bystanders, potential for starting fires in dry environments, and destruction of turf. Additionally, these devices can by quite loud, making them unsuitable in residential areas.

No repellents currently are available for successfully protecting gardens or other plantings from pocket gophers. Plants such as gopher purge *(Euphorbia lathyrus)*, castor bean (*Ricinus communis*), and garlic have been suggested as repellents, but research has not substantiated these claims.

Although many devices designed to frighten pocket gophers are commercially available—including vibrating stakes, ultrasonic devices, and wind-powered pinwheels—these rodents don't frighten easily, probably because of their repeated exposure to noise and vibrations from sprinklers, lawnmowers, vehicles, and people moving about. Another ineffective control method is placing chewing gum or laxatives in burrows in hopes of killing gophers.

Follow-up

Once you have controlled pocket gophers, monitor the area on a regular basis for reinfestation. Level all existing mounds after the control program, and clean away weeds and garden debris, so you easily can see fresh mounds.

It is important to check regularly for reinfestation, because pocket gophers can move in from other areas, and damage can reoccur in a short time. If your property borders wildlands, vacant lots, or other areas that serve as a source of gophers, you can expect gophers to reinvade regularly.

Be prepared to take immediate control action when they do. It is easier, cheaper, and less time consuming to control one or two gophers than to wait until the population builds up to the point where they cause excessive damage.

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RATS

Integrated Pest Management for Home Gardeners and Landscape Professionals

Rats are some of the most troublesome and damaging rodents in the United States. They eat and contaminate food, damage structures and property, and transmit parasites and diseases to other animals and humans. Rats live and thrive in a wide variety of climates and conditions and are often found in and around homes and other buildings, on farms, and in gardens and open fields.

Figure 1. Adult roof rat.

Figure 2. Norway rat.

IDENTIFICATION

People don't often see rats, but signs of their presence are easy to detect. (See the sidebar How to Spot a Rat Infestation.) In California, the most troublesome rats are two introduced species, the roof rat (Fig. 1) and the Norway rat (Fig. 2). It's important to know which species of rat is present in order to choose effective control strategies.

Norway rats, *Rattus norvegicus,* sometimes called brown or sewer rats, are stocky burrowing rodents that are larger than roof rats. Their burrows are found along building foundations, beneath rubbish or woodpiles, and in moist areas in and around gardens and fields (Fig. 3). Nests can be lined with shredded paper, cloth, or other fibrous material. When Norway rats invade buildings, they usually remain in the basement or ground floor. Norway rats live throughout the 48 contiguous United States. While generally found at lower elevations, this species can occur wherever people live.

Roof rats, *R. rattus*, sometimes called black rats, are slightly smaller than Norway rats. Unlike Norway rats, their tails are longer than their heads and bodies combined. Roof rats are agile climbers and usually live and nest above ground in shrubs, trees, and dense vegetation such as ivy. In buildings, they are most often found

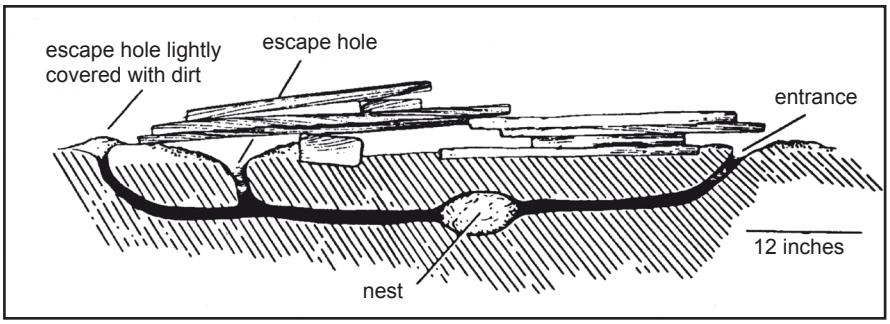

Figure 3. Norway rat burrow beneath a pile of boards.

HOW TO SPOT A RAT INFESTATION

Because rats are active throughout the year, periodically check for signs of their presence. Once rats have invaded your garden or landscape, unless your house is truly rodent proof, it is only a matter of time before you find evidence of them indoors. Experience has shown it's less time consuming to control rodents before their numbers get too high, and fewer traps and less bait will be required if control is started early.

Inspect your yard and home thoroughly. If the answer to any of the following questions is yes, you might have a rat problem.

- Do you find rat droppings around dog or cat dishes or pet food storage containers?
- Do you hear noises coming from the attic just after dusk?
- Have you found remnants of rat nests when dismantling your firewood stack?
- Does your dog or cat bring home dead rat carcasses?
- Is there evidence rodents are feeding on fruit or nuts that are in or falling from the trees in your yard?
- Do you see burrows among plants or damaged vegetables when working in the garden?
- Do you see rats traveling along utility lines or on the tops of fences at dusk or soon after?
- Have you found rat nests behind boxes or in drawers in the garage?
- Are there smudge marks caused by the rats rubbing their fur against beams, rafters, pipes, or walls?
- Do you see burrows beneath your compost pile or beneath the garbage can?
- Are there rat or mouse droppings in your recycle bins?
- Have you ever had to remove a drowned rat from your swimming pool or hot tub?
- Do you see evidence of something digging under your garden tool shed or doghouse?

PEST NOTES Publication 74106

University of California
Agriculture and Natural Resources
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in enclosed or elevated spaces such as attics, walls, false ceilings, and cabinets. The roof rat has a more limited geographical range (Fig. 4) than the Norway rat, preferring ocean-influenced, warmer climates. In areas where the roof rat occurs, the Norway rat might also be present. If you are unsure of the species, look for rats at night with a bright flashlight, or trap a few. Figure 5 illustrates some of the key physical differences between the two species of rats, while Table 1 summarizes identifying characteristics.

While rats are much larger than the common house mouse or meadow vole, a young rat is occasionally confused with a mouse. In general, very young rats have large heads and feet in proportion to their bodies, whereas those of adult mice are proportionately much smaller (Fig. 6). While both rats and mice gnaw on wood, rats leave much larger tooth marks than mice do. For additional information on mice, see *Pest Notes: House Mouse* and *Pest Notes: Voles (Meadow Mice)* listed in References.

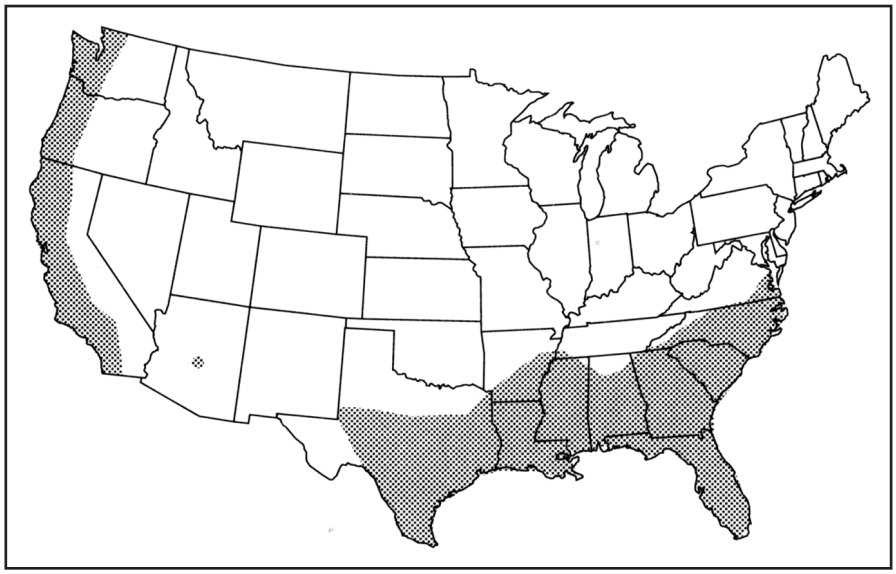

Figure 4. Distribution of roof rats in the contiguous United States.

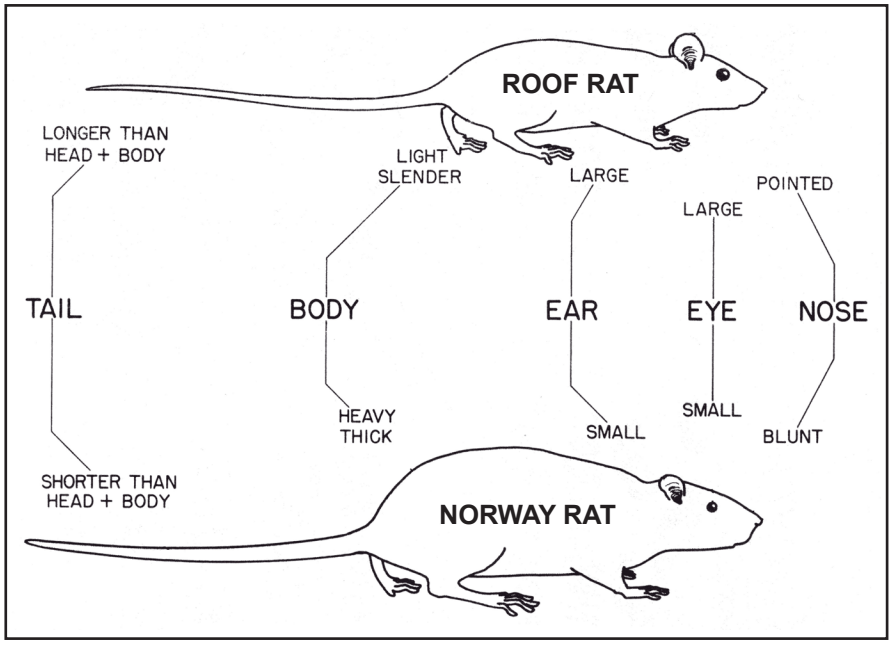

Figure 5. Key characteristics between roof rats (above) and Norway rats (below).

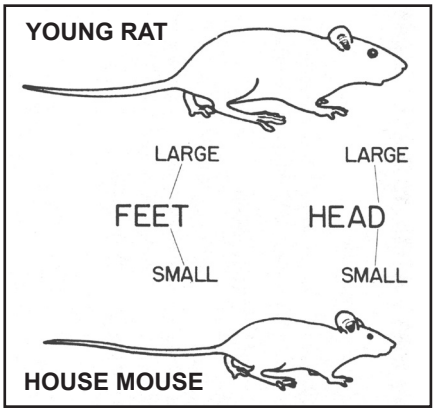

Figure 6. Key differences between a young rat (above) and mouse (below).

Table 1.

Identifying Characteristics of Adult Rats.

Characteristic	Roof rat	Norway rat
general appearance	sleek, agile	large, robust
color of belly	gray to white	mostly gray
body weight	5 to 10 ounces	7 to 18 ounces
tail	extends at least to snout, uniformly dark with fine scales	shorter than body, dark above and pale below, scaly
head	pointed muzzle	blunt muzzle
ears	long enough to reach eyes if folded over	don't reach eyes

BIOLOGY AND LIFE CYCLE

Rats, like house mice, are active mostly at night. They have poor eyesight, but they make up for this with their keen senses of hearing, smell, taste, and touch. Rats constantly explore and learn, memorizing the locations of pathways, obstacles, food and water, shelter, and features of their environment. They quickly detect and tend to avoid new objects and novel foods. Thus, they often avoid traps and baits for several days or more following their initial placement. While both species exhibit this avoidance of new objects, this neophobia is usually more pronounced in roof rats than in Norway rats.

Both Norway and roof rats can gain entry to structures by gnawing, climbing, jumping, or swimming through sewers and entering through toilets or broken drains. While Norway rats are more powerful swimmers, roof rats are more agile and are better climbers.

Norway and roof rats don't get along. The Norway rat is larger and the more dominant species; it will kill a roof rat in a fight. When the two species occupy the same building, Norway rats may dominate the basement and ground floors, with roof rats occupying the attic or second and third floors. Contrary to some conceptions, the two species can't interbreed. Both species can share some of the same food resources but don't feed side by side. Rats can grab food and carry it off to feed elsewhere.

Rats of either species, especially young rats, can squeeze beneath a door with only a 1/2-inch gap. If the door is made of wood, the rat might gnaw to enlarge the gap, but this might not be necessary.

Norway Rats

Norway rats eat a wide variety of foods but mostly prefer cereal grains, meats, fish, nuts, and some fruits. When searching for food and water, Norway rats usually travel an area of about 100 to 150 feet in diameter; seldom do they travel any further than 300 feet from their burrows or nests. The average female Norway rat has 4 to 6 litters per year and can successfully wean 20 or more offspring annually.

Roof Rats

Like Norway rats, roof rats eat a wide variety of foods, but they prefer fruits, nuts, berries, slugs, and snails. Roof rats are especially fond of avocados and citrus, and they often eat fruit that is still on the tree. When feeding on a mature orange, they make a small hole through which they completely remove the contents of the fruit, leaving only the hollowed-out rind hanging on the tree. They'll often eat the rind of a lemon, leaving the flesh of the sour fruit still hanging. Their favorite habitats are attics, trees, and overgrown shrubbery or vines. Residential or industrial areas with mature landscaping provide good habitat as does riparian vegetation of riverbanks and streams. Roof rats prefer to nest in locations off the ground and rarely dig burrows for living quarters if off-the-ground sites exist.

Roof rats routinely travel up to 300 feet for food. They can live in the landscaping of one residence and feed at another. They often can be seen at night running along overhead utility lines or fence tops. They have an excellent sense of balance and use their long tails to steady themselves while traveling along overhead utility lines. They move faster than Norway rats and are very agile climbers, which enables them to quickly escape predators. They can live in trees or in attics and climb down to a food source. The average number of litters a female roof rat has per year depends on many factors, but generally it is 3 to 5 with 5 to 8 young in each litter.

DAMAGE

Rats eat and contaminate foodstuffs and animal feed. They also damage containers and packaging materials in which foods and feed are stored. Both rat species cause problems by gnawing on electrical wires and wooden structures such as doors, ledges, corners, and wall material, and they tear up insulation in walls and ceilings for nesting.

Norway rats can undermine building foundations and slabs with their burrowing activities and can gnaw on all types of materials, including soft metals such as copper and lead, as well as plastic and wood. If roof rats are living in the attic of a residence, they can cause considerable damage with their gnawing and nest-building activities. They also damage garden crops and ornamental plantings.

Among the diseases rats can transmit to humans or livestock are murine typhus, leptospirosis, salmonellosis (food poisoning), and ratbite fever. Plague is a disease that both roof and Norway rats can carry, but in California it is more commonly associated with ground squirrels, chipmunks, and native woodrats.

MANAGEMENT

A successful rat control strategy typically includes three elements: sanitation measures; building construction and rodent proofing; and, if necessary, population control.

Sanitation

Sanitation is fundamental to rat control and must be continuous. If sanitation measures aren't properly maintained, the benefits of other measures will be lost and rats will quickly return. Good housekeeping in and around buildings will reduce available shelter and food sources for Norway rats and, to some extent, roof rats. Neat, off-the-ground storage of pipes, lumber, firewood, crates, boxes, gardening equipment, and other household goods will help reduce the suitability of the area for rats and also will make their detection easier. Collect garbage, trash, and garden debris frequently, and ensure all garbage receptacles have tight-fitting covers. Where dogs are kept and fed outdoors, rats can become a problem if there is a ready supply of dog food. Feed your pet only the amount of food it will eat at a feeding, and store pet food in rodent-proof containers.

For roof rats in particular, thinning dense vegetation will make the habitat less desirable. Climbing hedges such as Algerian or English ivy, star jasmine, and honeysuckle on fences or buildings are conducive to roof rat infestations and should be thinned or removed if possible, as should overhanging tree limbs within 3 feet of the roof. Separate the canopy of densely growing plants such as pyracantha and juniper from one another and from buildings by a distance of 2 feet or more to make it more difficult for rats to move between them.

Building Construction and Rodent Proofing

The most successful and long-lasting form of rat control in structures is exclusion, or "building them out." (See the sidebar Rodent Proofing Your Home.) Seal cracks and openings in building foundations and any openings for water pipes, electric wires, sewer pipes, drain spouts, and vents. No hole larger than 1/4 inch should be left unsealed, in order to exclude both rats and house mice. Make sure doors, windows, and screens fit tightly. Their edges can be covered with sheet metal if gnawing is a problem. Coarse steel wool, wire screen, and lightweight sheet metal are excellent materials for plugging gaps and holes. Norway and roof rats are likely to gnaw away plastic sheeting, wood, caulking, and other less sturdy materials.

Because rats and house mice are excellent climbers, openings above ground level must also be plugged. Rodent proofing against roof rats, because of their greater climbing ability, usually requires more time to find entry points than for Norway rats. Roof rats often enter buildings at the roofline, so be sure that all access points in the roof are sealed. If roof rats are traveling on overhead utility wires, contact a pest control professional or the utility company for information and assistance with measures that can be taken to prevent this.

RODENT PROOFING YOUR HOME

- Repair or replace damaged ventilation screen around the foundation and under the eaves.
- Provide a tight-fitting cover for the crawl space.
- Seal all openings around pipes, cables, and wires that enter through walls or the foundation.
- Be sure all windows that can be opened are screened and that the screens are in good condition.
- Cover all chimneys with a spark arrester.
- Make sure internal screens on roof and attic air vents are in good repair.
- Cover rooftop plumbing vent pipes in excess of 2 inches in diameter with screens over their tops.
- Make sure all exterior doors are tight fitting and weatherproofed at the bottom.
- Seal gaps beneath garage doors with a gasket or weather stripping.
- Install self-closing exits to clothes dryer vents to the outside.
- Remember that pet doors into the house or garage provide an easy entrance for rodents.
- Keep side doors to the garage closed, especially at night.

Population Control

When food, water, and shelter are available, rat populations can increase quickly. While the most permanent form of control is to limit food, water, shelter, and access to buildings, direct population control often is necessary.

For controlling rats indoors, using traps is best. When rodenticides (toxic baits) are used in structures, rats can die in inaccessible locations such as within walls or ceilings. In hot weather, the stench of a dead rat can be unbearable and can necessitate cutting a hole in the wall to remove the carcass. Also, ectoparasites such as fleas and mites often leave dead rat carcasses and can infest the entire house if the carcass isn't removed promptly.

Trapping. Trapping is the safest and most effective method for controlling rats in and around homes, garages, and other structures. Because snap traps can be used over and over, trapping is less costly than poison baits but more labor intensive. Traps can be set and left indefinitely in areas such as attics where rats have been a problem in the past. The simple, wooden rat-size snap trap is the least expensive option, but some people prefer the newer plastic, single-kill rat traps, because they are easier to set and to clean. Snap traps with large plastic treadles are especially effective, but finding the best locations to set traps is often more important than what type of trap is used. Generally, young rats can't be trapped until they are about a month old, which is when they leave the nest to venture out for food.

Nutmeats, dried fruit, bacon, or a piece of kibbled pet food can be an attractive bait for traps. Fasten the bait securely to the trigger of the trap with light string, thread, or fine wire so the rodent will spring the trap when attempting to remove the food. Even glue can be used to secure the bait to the trigger. Soft baits such as peanut butter and cheese can be used, but rats sometimes take soft baits without setting off the trap. Set traps so the trigger is sensitive and will spring easily.

The best places to set traps are in secluded areas where rats are likely to travel and seek shelter. Droppings, gnawings, and damage indicate the presence of rodents, and areas where such evidence is found usually are the best places to set traps, especially when these areas are located between their shelter and food sources. Place traps in natural travel ways, such as along walls, so the rodents will pass directly over the trigger of the trap.

For *Norway rats*, set traps close to walls, behind objects, in dark corners, and in places where rat signs, such as droppings, have been seen. Position traps along a wall so that they extend from the wall at right angles, with the

trigger end nearly touching the wall (Fig. 7). If traps are set parallel to the wall, they should be set in pairs to intercept rodents traveling from either direction.

For *roof rats*, the best places for traps are off the ground in locations where rats might be coming down from their nests to find food—such as on ledges, shelves, branches, fences, pipes, or overhead beams—where they can be fastened with screws or wire (Fig. 8). In homes, the attic and garage rafters close to the infestation are good trapping sites (Fig. 9). In areas where children, pets, or birds might contact traps, place the trap in a box or use a barrier to keep them away.

Use as many traps as are practical so trapping time will be short and decisive. A dozen or more traps for a heavily infested home might be necessary. Place rat traps about 10 to 20 feet apart. If a rat sets off a trap without getting caught, it will be very difficult to catch the rat with a trap again. To reduce the likelihood of "trap shyness," one strategy is to leave traps baited but unset until the bait has been taken overnight. To avoid using too few traps, if bait it taken from all traps, double the number of baited traps exposed, and keep doing so until some traps remain with bait untaken; then bait and set all traps.

Electrocution Traps. Traps that kill rats by electrocution (e.g., Rat Zapper or Victor Electronic traps) are considerably more expensive than other traps, but some homeowners, managers of commercial buildings, and pest control companies have found them to provide good results. As with snap traps, for existing rodent populations it's important to use enough traps to achieve control in a timely manner. These traps need to be checked frequently, and dead rodents should be removed for disposal.

Don't touch rodents with your bare hands, and wash thoroughly after handling traps. Use disposable gloves to handle dead rodents. Dispose of dead rats by burying them or by placing them in a sealed plastic bag and putting them in the trash.

Glue Boards. Glue traps, which work on the same principle as flypaper, aren't recommended for controlling rats, as they are much less effective for rats than for mice. A major drawback with glue boards and other live-catch traps is the trapped rat might not die quickly, and you will need to kill it by delivering a sharp blow to the base of the skull using a sturdy rod or stick. Rats caught in glue traps can struggle for quite some time, often dragging the trap as they try to escape. When used indoors, cats and dogs can get into the glue and track it around the house; outdoors, glue traps can capture lizards, birds, and other nontarget wildlife.

Live Traps. Live traps aren't preferred, because trapped rats must be either humanely killed or released elsewhere. Releasing rats outdoors isn't recommended, as they can cause health concerns to people, pets, and other domestic animals. Because neither the roof rat nor the Norway rat is native to the United States, their presence in the wild is very detrimental to native ecosystems. They have been known to decimate some bird populations.

Rodenticides (Toxic Baits)

While trapping is generally recommended for controlling rats indoors, when the number of rats around a building is high, you might need to use toxic baits to achieve adequate control, especially if there is a continuous reinfestation from surrounding areas. If this is the case, consider hiring a licensed pest control applicator who is trained to use rodenticides safely.

Baits to control rodents are formulated with an attractant (generally food) and a rodenticide (toxin). Changes in rodenticide regulations went into effect in mid-2011 in an effort to prevent rodenticide hazards to wildlife and pets and to reduce accidental exposure to children. These federal EPA restrictions now permit manufacturers to produce, for sale to the general public, only wax block, gel, or paste rat and mouse baits

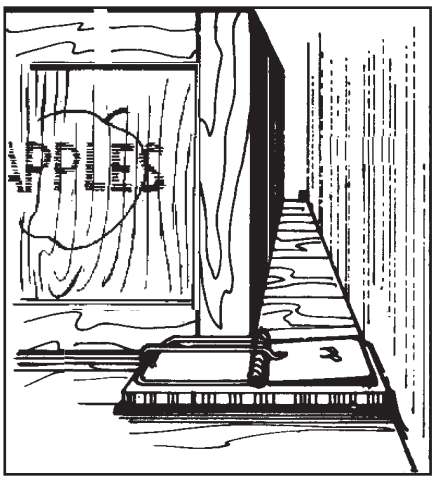

Figure 7. Set traps along walls so rodents pass over the treadle. A box or board placed to advantage can guide the rat into the trap.

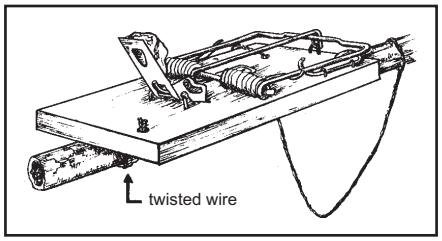

Figure 8. Setting a trap on an overhead pipe. To support the trap, drill a hole in the trap base near the trigger or treadle and twist a wire around the pipe, leaving a short, upstanding end. The hole in the trap is put over the wire end. A soft wire from the other end of the trap is fastened to an object below the runway. When sprung, the trap and rat will bounce off and hang from the wire, leaving the runway free for other rats to find other traps.

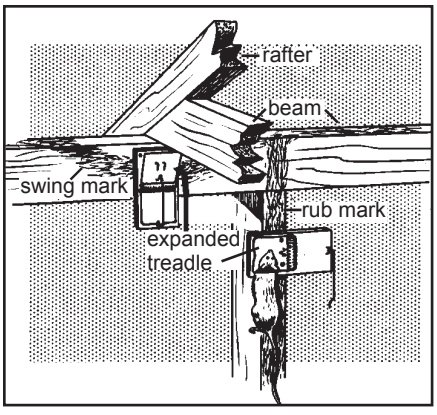

Figure 9. Overhead traps are particularly useful for roof rats. Purchase traps with an expanded treadle and fasten them to beams or studs with screws or wires so the treadle is directly in the pathway of the rat.

that are packaged in ready-to-use, disposable bait stations. Agricultural producers and professional pest control personnel are able to obtain more types of rodenticides in various formulations, some of which are restricted use pesticides.

Anticoagulant Rodenticides. Anticoagulants are blood-thinning drugs that cause an animal's blood to lose the ability to clot, damaging capillaries and resulting in internal bleeding that is fatal. These active ingredients are used at very low levels and the onset of symptoms is delayed for several days, so the rodent doesn't avoid the bait because of its taste or the onset of illness. When prepared with good-quality cereals and other ingredients, anticoagulant baits provide good to excellent control when baits are fresh and when placed in suitable locations so as to attract rats.

The various anticoagulant active ingredients currently registered for use against rats in California are listed in Table 2. Anticoagulants fall into two groups—the older "first-generation" compounds such as warfarin, chlorophacinone, and diphacinone, which require a rodent to consume multiple doses over a period of several days; and the newer "second-generation" compounds such as brodifacoum, bromadiolone, difenacoum, and difethialone, which can be fatal after a single feeding. Since not all rats will consume bait when it first becomes available, bait application directions typically recommend providing an uninterrupted supply of bait for at least 10 or 15 days or until evidence of rodent activity ceases. A rodent feeding on anticoagulant bait usually won't die until 2 to 6 days following ingestion of a lethal dose. This slow action is a safety advantage, allowing accidental poisoning to be treated before serious illness occurs.

The recommended strategy of bait application, which is often needed for optimum rodent control, can result in a rodent ingesting an overdose of

Table 2.

Anticoagulant Rodenticides for Rat Control Registered for Use in California.

First-generation anticoagulants	
Common name	**Example products (trade names)***
chlorophacinone	J.T. Eaton AC, Rozol
diphacinone	Ramik, Sierra
warfarin	Kaput, Rodex
Second-generation anticoagulants	
Common name	**Example products (trade names)***
brodifacoum	Final, Havoc, Jaguar, Talon
bromadiolone	BootHill, Contrac, Hawk, Maki
difenacoum	Di-Kill
difethialone	Generation, Hombre

*Always check the label for the active ingredient. The same or similar trade names may be used for products with different active ingredients.

Table 3.

Other Rodenticides for Rat Control Registered for Use in California.

Common name	Example products (trade names)*
bromethalin	Assault, Gunslinger, Rampage
cholecalciferol	Agrid3, Quintox, Terad3
zinc phosphide	Eraze, Prozap, ZP

*Always check the label for the active ingredient. The same or similar trade names may be used for products with different active ingredients.

the second-generation anticoagulants, which are more effective in part because they persist longer in the rodent's body than do the first-generation anticoagulants. Thus, they also have the potential to be hazardous to predators and scavengers, which may consume poisoned rodents. This secondary hazard from anticoagulants, as well as the primary hazard of nontarget animals directly ingesting rodent baits, is substantially reduced when baits are applied and used properly, according to label directions.

Because of the potentially greater hazard of second-generation anticoagulants to children and household pets, these active ingredients are no longer allowed to be manufactured for sale to the general public. Homeowners will be able to purchase only prepackaged, ready-to-use bait stations containing the first-generation anticoagulants (i.e., warfarin, chlorophacinone, or diphacinone) or the nonanticoagulants bromethalin or cholecalciferol. The second-generation anticoagulants (i.e., brodifacoum, bromadiolone, difenacoum, and difethialone) have never been approved for use in field situations or for use against ground squirrels, meadow mice (*Microtus*), pocket gophers, or any other rodents except house mice, Norway rats, and roof rats. Some of the second-generation rodenticides now labeled for use by only by agricultural producers may be restricted to applications in and around agricultural buildings.

Anticoagulants have the same effect on nearly all warm-blooded animals, but the sensitivity to these toxicants varies among species with larger animals generally requiring a larger dose of toxicant than smaller animals. Dogs are more susceptible to anticoagulant poisoning than are many other mammals, and small to medium-sized dogs that seek out and consume rodents or rodent carcasses could be at greatest risk. Symptoms of anticoagulant poisoning in mammals include lethargy, loss of color in soft tissues such as the lips and gums, and bleeding from the mouth, nose, or intestinal tract. Vitamin K_1 is the antidote for anticoagulant rodenticides,

although in cases of severe poisoning, whole blood transfusion is also used. (See the sidebar Pets and Rat Control.)

Other Rodenticides. Three other active ingredients are registered and used as rodenticides to control rats and house mice in California: bromethalin, cholecalciferol, and zinc phosphide. (See Table 3.) Although not anticoagulants, application directions for bromethalin and cholecalciferol are somewhat similar to those for anticoagulant rodenticides. These two materials are formulated to serve as chronic rodenticides so that rats will have the opportunity to feed on exposed baits one or more times over a period of one to several days. Bait acceptance is generally good when fresh, well-formulated products are used.

Zinc phosphide differs in that it is an acute toxicant that causes death of a rodent within several hours after a lethal dose is ingested. Because zinc phosphide baits often require prebaiting to get adequate bait acceptance (offering rats similar but nontoxic bait before applying the zinc phosphide bait), it's not commonly used against rats and is infrequently available to consumers. An advantage of zinc phosphide bait is its ability to achieve a comparatively quick reduction of a rat population, and for this reason pest control personnel and agricultural producers sometimes favor it.

While risk of secondary poisoning to predators and scavengers is low because of the mode of action of these three rodenticides, a primary hazard to nontarget animals (i.e., pets, domestic animals, and wildlife) that may consume rodent baits can occur when required precautions regarding bait placement aren't followed.

Bait Placement and Bait Stations. All rodenticide baits must be used carefully according to the label directions, which have become more specific and more restrictive. Some baits must be contained within bait stations for all outdoor, above-ground applications (Fig. 10). In addition to increasing the safety of the bait, bait stations also help the rats feel secure while feeding. Place all bait stations in rat travel ways or near their burrows and harborage. Don't expect rats to go out of their way to find the bait. For Norway rats, place bait stations near rodent burrows or suspected nest sites, against walls, or along travel routes. For roof rats, place baits in elevated locations, such as in the crotch of a tree, on top of a fence, or high in a vine. If you place bait stations above ground level, take care that they are securely fastened and won't fall to the ground where children or pets could find them. Because rats often are suspicious of new or unfamiliar objects, it might take several days for them to enter and feed in bait stations.

Where it is impossible to exclude rodents from structures, rat control can be accomplished by establishing permanent bait stations in buildings and around the perimeters of buildings. Place fresh bait in these stations to control invading rats before populations become established. For best results, make sure there is a continuous supply of bait until feeding stops. With the first-generation anticoagulant baits, it usually takes 5 or more days, once the rats start feeding, for them to die. Check bait stations regularly and replace bait if it gets old or moldy, because rats won't eat stale bait.

PETS AND RAT CONTROL

Many of the methods and materials used to control rats can affect pets as well. All rodent baits are toxic to dogs and cats, so be cautious when using these products. Because anticoagulants are cumulative and slow acting to various degrees, depending on whether it is multiple or single feeding, dead rats can contain several lethal doses of toxicant, and secondary poisoning of pets and wildlife is possible if they eat several rat carcasses over a few days. While this secondary poisoning is possible, it isn't common with the first-generation anticoagulants. Most fatalities in pets involve dogs and are due to the animal eating the bait directly (primary poisoning) or a combination of direct bait consumption and secondary poisoning. Concerns about both primary and second hazards of second-generation anticoagulant baits led the EPA to restrict their retail sale in mid-2011, making them available only to agricultural users and professional pest control personnel. When such baits are in use, extra caution is needed, as exposure to even a single dead rodent might be enough to poison a pet.

The best precaution is to keep pets away from bait and dead or dying rodents. Dispose of dead rodents by burying them or by placing them in a sealed plastic bag and putting them in the trash. Do not handle them with bare hands. Read all label directions on the bait and place it only in areas that are specified on the label. Put bait in locations out of the reach of children, pets, domestic animals, and nontarget wildlife or in tamper-resistant bait stations as required by the product label. In many cases, bait stations must be resistant to destruction by dogs and by children younger than 6 years old and must be constructed in a manner that prevents a child from reaching into the bait compartments and getting the bait. If bait can be shaken from stations when lifted or tipped, stations must be secured or otherwise immobilized. As you would with any poison, take care to ensure safety to children and pets by limiting their access to the bait. Clearly label all bait stations with appropriate warnings, and store unused bait in a locked cabinet or another area inaccessible to children and domestic animals.

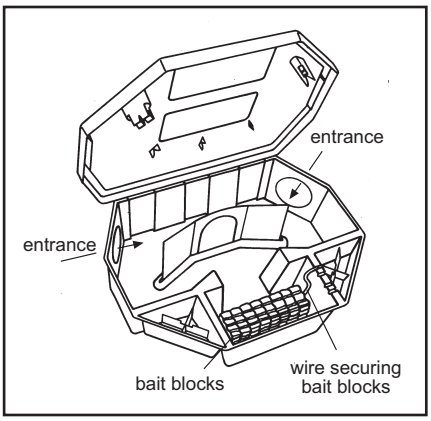

Figure 10. A commercially made, tamper-resistant bait station made for rats. Entrances also will permit house mice to enter and feed. All baits placed in outdoor locations for rats and mice must be contained within approved, tamper-proof bait stations.

Baits and bait stations now have more restrictive regulations regarding locations for use. Different designs of commercially manufactured bait stations may be required, depending on the particular situation and the bait formulation used. For example, some labels state "tamper-resistant

bait stations must be used if children, pets, nontarget mammals, or birds may access the bait." Certain prepackaged bait stations intended for sale to homeowners can be used only inside structures and are prohibited for use in any area accessible to pets or outdoors. Other baits or bait stations may also be used around the periphery of structures or within 50 feet of a structure. Because rats may not travel far from their shelter to find food, many product labels suggest making bait placements at 10- to 30-foot intervals. Place bait boxes next to walls (with the openings close to the wall) or in other places where rats are active. In all cases, the user must follow label directions.

Remove and properly dispose of all uneaten bait at the end of a control program. In addition, it's wise to collect and properly dispose of any dead rodents found during the course of a rodenticide application. You can pick them up using a sturdy plastic bag inverted on your hand, seal them in the bag for disposal with household garbage, or bury them in a location where pets or scavengers won't easily dig them up.

Other Control Methods

Rats are wary animals, easily frightened by unfamiliar or strange noises. However, they quickly become accustomed to repeated sounds, making the use of frightening devices—including high frequency and ultrasonic sounds—ineffective for controlling rats in homes and gardens.

Rats have an initial aversion to some odors and tastes, but no repellents have been found to solve a rat problem for more than a very short time. There are no truly effective rat repellents registered for use in California.

Smoke or gas cartridges are registered and sold for controlling burrowing rodents. When placed into the burrows and ignited, these cartridges produce toxic and suffocating smoke and gases. Because Norway rat burrows can extend beneath a residence and have several open entrances, toxic gases can permeate the dwelling. For this reason and because some fire hazard is associated with their use, smoke and gas cartridges aren't recommended for rat control around homes.

Norway rats can be drowned or flushed from their burrows by flooding them with water from a garden hose and then closing the holes with soil.

Predators, especially cats and owls, eat rats and mice. Some house cats don't have the ability or inclination to prey on adult Norway rats. Often, predators aren't able to keep rodent numbers below levels that are acceptable to most people. Further, pet food can serve as an attractant and provide a continuous food supply to rats and mice in suburban environments.

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HOUSE MOUSE

Integrated Pest Management for Home Gardeners and Landscape Professionals

The house mouse, *Mus musculus*, is one of the most troublesome and costly rodents in the United States (Fig. 1). House mice thrive under a variety of conditions; they are found in and around homes and commercial structures as well as in open fields and on agricultural land. House mice consume and contaminate food meant for humans, pets, livestock, or other animals. In addition, they cause considerable damage to structures and property, and they can transmit pathogens that cause diseases such as salmonellosis, a form of food poisoning.

IDENTIFICATION

House mice are small rodents with relatively large ears and small, black eyes. They weigh about 1/2 ounce and usually are light brownish to gray. An adult is about 5 to 7 inches long, including the 3- to 4-inch tail.

Droppings, fresh gnaw marks, and tracks indicate areas where mice are active. Mouse nests are made from finely shredded paper or other fibrous material, usually in sheltered locations. House mice have a characteristic musky odor that reveals their presence. Mice are active mostly at night, but they can be seen occasionally during daylight hours.

While the house mouse hasn't been found to be a carrier of hantavirus, the deer mouse, *Peromyscus maniculatus*, (Fig. 2), which sometimes invades cabins and outbuildings in California, harbors the Sin Nombre virus, which causes a rare but often fatal illness known as hantavirus pulmonary syndrome (HPS). The house mouse is distinguished from the deer mouse by its overall gray coat. The deer mouse has larger eyes and a white underside with a distinct line of demarcation between the dark coloration on top and the white underside. In addition, the tail on the house mouse has almost no fur on it, whereas the tail of the deer mouse is moderately to well furred and is light underneath and dark on top. Before attempting to clean up premises where deer mice have been present, contact your county health department or the California Department of Public Health , or see the Centers for Disease Control and Prevention Web site (www.cdc.gov/rodents/) for information about how to prevent hantavirus exposure.

BIOLOGY

Native to Central Asia, the house mouse arrived in North America on ships with settlers from Europe and other points of origin. A very adaptable animal, the house mouse often lives in close association with humans, along with Norway rats (Fig. 3) and roof rats (Fig. 4); however, mice are more common and more difficult to control than rats. For more information about rats and rat management, see *Pest Notes: Rats* listed in References.

Although house mice usually prefer to eat cereal grains, they are nibblers and will sample many different foods. Mice have keen senses of taste, hearing, smell, and touch. They also are excellent climbers and can run up any rough vertical surface. They will run horizontally along wire cables or ropes and can jump up to 12 inches from the floor onto a flat surface. Mice can squeeze through openings slightly larger than 1/4 inch across. House mice frequently enter homes in autumn, when outdoor temperatures at night become colder.

In a single year, a female may have 5 to 10 litters of about 5 or 6 young. Young are born 19 to 21 days after conception, and they reach reproductive maturity in 6 to 10 weeks. The life span of a mouse is usually 9 to 12 months.

Figure 1. House mouse.

Figure 2. The deer mouse is sometimes found in homes and outbuildings and is a reservoir of the deadly Sin Nombre hantavirus.

Figure 3. Adult rats, such as this Norway rat and the roof rat below, are much larger than mice.

Figure 4. Roof rat.

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Agriculture and Natural Resources
Statewide Integrated Pest Management Program

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CONTROLLING HOUSE MICE

Because house mice are so small, they can gain entry into homes and other buildings much more easily than rats. As a result, house mouse infestations are probably 10 to 20 times more common than rat infestations. Effective control involves sanitation, exclusion, and population reduction. Sanitation and exclusion are preventive measures. When a mouse infestation already exists, some form of population reduction such as trapping or baiting is almost always necessary.

A key to successful long-term mouse control is limiting shelter and food sources wherever possible. Trapping works well, especially when a sufficient number of traps are placed in strategic locations. Trapping also can be used as a follow-up measure after a baiting program. When considering a baiting program, decide if the presence of dead mice will cause an odor or sanitation problem. If so, trapping may be the best approach. After removing mice, take steps to exclude them so that the problem doesn't recur.

Several types of rodenticides are available, which can be purchased as ready-to-use baits that typically are labeled for use against only house mice, Norway rats (*Rattus norvegicus*), and roof rats (*R. rattus*). Because all rodenticides are toxic to humans, pets, and wildlife, take special precautions to prevent access to baits by children and nontarget animals.

Sanitation

Because mice can survive in very small areas with limited amounts of food and shelter, controlling them can be very challenging, especially in and around older structures. Most buildings in which food is stored, handled, or used will support house mice if the mice aren't excluded, no matter how good the sanitation. While good sanitation seldom will completely control mice, poor sanitation is sure to attract them and will permit them to thrive in greater numbers. Pay particular attention to eliminating places where mice can find shelter. If they have few places to hide, rest, build nests, or rear their young, they can't survive in large numbers.

Exclusion

Exclusion is the most successful and permanent form of house mouse control. Build them out by eliminating all gaps and openings larger than 1/4 inch. Stainless steel scouring pads make a good temporary plug. Seal cracks in building foundations and around openings for water pipes, vents, and utility cables with metal or concrete. Doors, windows, and screens should fit tightly. It may be necessary to cover the edges of doors and windows with metal to prevent gnawing. Plastic screening, rubber, vinyl, insulating foam, wood, and other gnawable materials are unsuitable for plugging holes used by mice.

Traps

Trapping is an effective method for controlling small numbers of house mice. Although time consuming, it's the preferred method in homes, garages, and other structures where only a few mice are present. Trapping has several advantages as it doesn't rely on potentially hazardous rodenticides, it permits the user to view his or her success, and it allows for disposing of trapped mice, thereby eliminating dead mouse odors that may result when poisoning is done within buildings.

Snap traps are effective and can be purchased in most hardware and grocery stores. The simple, wooden mouse-size snap trap is the least expensive option, but some people prefer the newer plastic, single-kill mouse traps because they are easier to set and clean. Snap traps with large plastic treadles are especially effective, but finding the best locations to set traps is often more important than what type of trap is used. Traps can be baited with a variety of foods; peanut butter is the most popular, because it is easy to use and very attractive to mice. Set the triggers lightly so the traps will spring easily.

Multiple-capture live traps for mice, such as the Victor Tin Cat and the Ketch-All, also are available from hardware stores and pest control suppliers. They can catch several mice at a time without being reset, reducing the labor involved. When using such traps, live mice need to be removed frequently and humanely euthanized.

Electrocution traps. Battery-operated traps that kill rats by electrocution (e.g., Rat Zapper and Victor) are considerably more expensive than other traps, but some homeowners, managers of commercial buildings, and pest control companies have found them to provide good house mouse control. As with snap

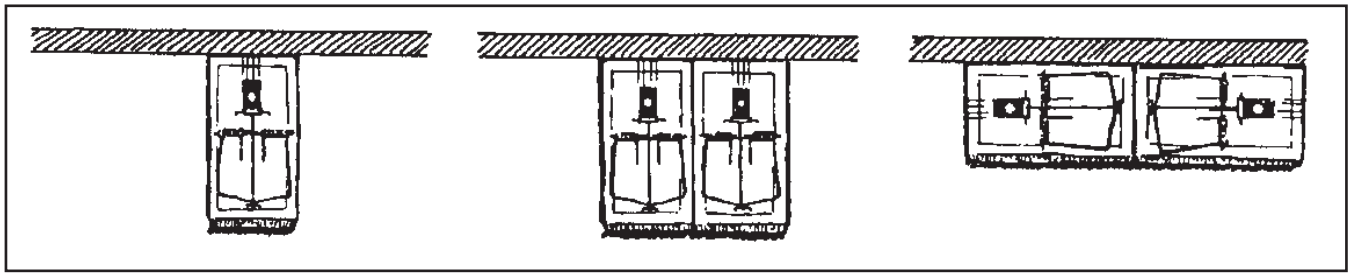

Figure 5. Placement of snap traps: (a) single trap with trigger next to wall; (b) double set, which increases your success; (c) double set placed parallel to the wall with triggers to the outside.

traps, for existing mouse populations it's important to use enough traps to achieve control in a timely manner. These traps need to be checked frequently, and dead mice should be removed for disposal.

Set traps behind objects, in dark corners, and in places where there is evidence of mouse activity. Place them close to walls so mice will pass directly over the trigger (Fig. 5). Traps can be set on ledges, on top of pallets of stored materials, or in any other locations where mice are active. Use enough traps to make the trapping period short and decisive. Mice seldom venture far from their shelter and food supply, so space traps no more than about 10 feet apart in areas where mice are active.

Glue Boards. An alternative to traps are glue boards, which catch and hold mice that are attempting to cross them in much the same way flypaper catches flies. They are available at many places where other rodent control products are sold.

A major drawback to glue boards and other live-catch traps is the trapped mouse might not die quickly, and you will need to kill it by delivering a sharp blow to the base of the skull using a sturdy rod or stick. Drowning isn't considered humane, although trap manufacturers sometimes suggest it. Releasing live-caught mice back to the outdoors frequently promotes increased mouse problems. Mice caught in glue traps can struggle for quite some time, and for this reason some people consider them to be less humane than kill traps.

If using glue boards, place them along walls where mice travel. Don't use them where children, pets, or desirable wildlife can contact them. Don't use glue boards to catch deer mice (*Peromyscus* species), as captured mice often urinate and defecate while stuck to the trap, thus increasing the risk of your exposure to hantavirus. Nontarget animals that become caught on the glue board can be removed in most cases by using vegetable oil as a solvent to loosen the glue. Glue boards lose their effectiveness in dusty areas unless covered. Extreme temperatures also may affect the tackiness of glue boards.

Table 1.

Anticoagulant Rodenticides for House Mouse Control Registered for Use in California.

First-generation anticoagulants	
Common name	**Example products (trade names)***
chlorophacinone	J.T. Eaton AC, Rozol
diphacinone	Ramik, Sierra
warfarin	Kaput, Rodex
Second-generation anticoagulants	
Common name	**Example products (trade names)***
brodifacoum	Final, Havoc, Jaguar, Talon
bromadiolone	BootHill, Contrac, Hawk, Maki
difenacoum	Di-Kill
difethialone	Generation, Hombre

*Always check the label for the active ingredient. The same or similar trade names may be used for products with different active ingredients.

Baits

Baits to control rodents are formulated with an attractant (generally food) and a rodenticide (toxin). Changes in rodenticide regulations went into effect in mid-2011 in an effort to prevent rodenticide hazards to wildlife and pets and reduce accidental exposure to children. These federal EPA restrictions now permit manufacturers to produce, for sale to the general public, only rat and mouse baits that are packaged in ready-to-use, disposable bait stations. Agricultural producers and professional pest control personnel are able to obtain more types of rodenticides in various formulations, some of which are restricted use pesticides.

Anticoagulant Rodenticides. Anticoagulants are blood-thinning drugs that cause an animal's blood to lose the ability to clot, damaging capillaries and resulting in internal bleeding that is fatal. These active ingredients are used at very low levels and the onset of symptoms is delayed, so the rodent doesn't avoid the bait because of its taste or the onset of illness. When prepared with good-quality cereals and other ingredients, anticoagulant baits provide good to excellent house mouse control when baits are fresh and when placed in suitable locations so as to attract mice.

The various anticoagulant active ingredients currently registered for use against house mice in California are listed in Table 1. Anticoagulants fall into two groups—the older "first-generation" compounds warfarin, chlorophacinone, and diphacinone, which require a rodent to consume multiple doses over a period of several days; and the newer "second-generation" compounds brodifacoum, bromadiolone, difenacoum, and difethialone, which can be fatal after a single feeding.

Since not all mice or rats will consume bait when it first becomes available, bait application directions typically recommend providing an uninterrupted supply of bait for at least 10 or 15 days or until evidence of rodent activity ceases. A rodent feeding on anticoagulant bait usually won't die until 2 to 6 days following ingestion of a lethal dose. This slow action is a safety advantage, allowing accidental poisoning to be treated before serious illness occurs; it also prevents mice from associating illness with a particular bait, thus preventing "bait shyness."

This strategy of bait application, which is often needed for optimum rodent control, can result in a rodent ingesting an overdose of the second-generation anticoagulants, which are more effective in part because they persist longer in the rodent's body than do the first-generation anticoagulants. Thus, they also have the potential to be hazardous to predators and scavengers, which

may consume poisoned rodents. This secondary hazard from anticoagulants, as well as the primary hazard of nontarget animals directly ingesting rodent baits, is substantially reduced when baits are applied and used properly, according to label directions.

Because of the potentially greater hazard of second-generation anticoagulants to children, household pets, and nontarget wildlife, these active ingredients are no longer allowed to be manufactured for sale to the general public. Homeowners will be able to purchase only prepackaged, ready-to-use bait stations containing the first-generation anticoagulants (i.e., warfarin, chlorophacinone, or diphacinone) or the nonanticoagulants bromethalin or cholecalciferol. The second-generation anticoagulants (i.e., brodifacoum, bromadiolone, difenacoum, and difethialone) have never been approved for use in field situations or for use against ground squirrels, meadow mice (*Microtus*), pocket gophers, or any other rodents except house mice, Norway rats, and roof rats. Some of the second-generation rodenticides now labeled for use only by agricultural producers or professional pest control personnel may be restricted to applications in and around agricultural buildings.

Anticoagulants have the same effect on nearly all warm-blooded animals, but the sensitivity to these toxicants varies among species, and larger animals generally require a larger dose of toxicant than do smaller animals. Dogs are more susceptible to anticoagulant poisoning than are many other mammals, and small- to medium-sized dogs that seek out and consume rodents or rodent carcasses could be at greatest risk. Symptoms of anticoagulant poisoning in mammals include lethargy, loss of color in soft tissues such as the lips and gums, and bleeding from the mouth, nose, or intestinal tract. Vitamin K_1 is the antidote for anticoagulant rodenticides, although in cases of severe poisoning a whole blood transfusion is also used.

Table 2.

Other Rodenticides for House Mouse Control Registered for Use in California.

Common name	Example products (trade names)*
bromethalin	Assault, Gunslinger, Rampage
cholecalciferol	Agrid3, Quintox, Terad3
zinc phosphide	Eraze, Prozap, ZP

*Always check the label for the active ingredient. The same or similar trade names may be used for products with different active ingredients.

Other Rodenticides. Three other active ingredients are registered and used as rodenticides to control house mice and rats in California—bromethalin, cholecalciferol, and zinc phosphide (Table 2). Although not anticoagulants, application directions for bromethalin and cholecalciferol are somewhat similar to those for anticoagulant rodenticides. These two materials are formulated to serve as chronic rodenticides so that house mice will have the opportunity to feed on exposed baits one or more times over the period of one to several days. Bait acceptance is generally good when fresh, well-formulated products are used.

Zinc phosphide differs in that it is an acute toxicant that causes death of a house mouse within several hours after a lethal dose is ingested. Because zinc phosphide baits often require prebaiting (offering mice similar but nontoxic bait before applying the zinc phosphide bait) to get adequate acceptance, it's not commonly used against house mice and is infrequently available to consumers. An advantage of zinc phosphide bait is its ability to achieve a comparatively quick reduction of a mouse population; it's sometimes favored by pest control personnel and agricultural producers.

While risk of secondary poisoning to predators and scavengers is low because of the mode of action of these three rodenticides, primary hazard to nontarget animals (e.g., pets, domestic animals, and wildlife) that may consume rodent baits can occur when required precautions regarding bait placement aren't followed.

Bait Placement and Bait Stations. All rodenticide baits must be used carefully according to the label directions, which have become more specific and more restrictive. Where it's impossible to exclude rodents from structures, mouse control can be accomplished by establishing permanent bait stations in buildings and around the perimeters of buildings. Place fresh bait in these stations to control invading mice before mouse populations become established. Check bait stations regularly and replace bait if it gets old or moldy, because mice won't eat stale bait.

Baits and bait stations containing bait now have more restrictive regulations regarding locations for use. Different designs of commercially manufactured bait stations may be required, depending on the particular situation and the bait formulation used. For example, some labels state tamper-resistant bait stations must be used if children, pets, nontarget mammals, or birds may access the bait. Some baits require that they be contained within bait stations for all outdoor, above-ground applications. Certain prepackaged bait stations intended for sale to homeowners can be used only inside structures and are prohibited for use in any area accessible to pets or for use outdoors. Other baits or bait stations may also be used around the periphery of structures or within 50 feet of a structure.

Because house mice seldom travel far from their shelter to find food, many product labels suggest making bait placements at 8- to 12-foot intervals. Place bait boxes next to walls, with the openings close to the wall, or in other places where mice are active. In all cases, the user must follow label directions.

Remove and properly dispose of all uneaten bait at the end of a control program. In addition, it's wise to collect and properly dispose of any dead rodents found during the course of a rodenticide application. You can pick them up using a sturdy plastic bag inverted on your hand, and either seal them in the bag for disposal with household garbage or bury them in a location where they won't be easily dug up by pets or scavengers.

Rodent Repeller Devices

Although mice are easily frightened by strange or unfamiliar noises, they quickly become accustomed to regularly repeated sounds. Ultrasonic sounds, those above the range of human hearing, have very limited use in rodent control, because they are directional and don't penetrate behind objects. They also lose their intensity quickly with distance. There is little evidence that sound, magnetic, or vibration devices of any kind will drive established mice or rats from buildings or provide adequate control. Despite their lack of effectiveness, many such devices continue to be sold through magazine advertisements and at some retail outlets.

Predators

Some dogs and cats will catch and kill mice and rats. There are few situations, however, in which they will sufficiently control rodent populations. Around most structures, mice can find many places to hide and rear their young out of the reach of such predators. Cats probably can't eliminate existing mouse populations, but in some situations they may be able to prevent reinfestation once mice have been controlled. In urban and suburban areas, it's common to find rodents living in close association with cats and dogs, relying on their food for nourishment. Mice frequently live beneath doghouses and soon learn they can feed on dog food when the dog is absent or asleep.

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To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned.

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University of California Agriculture and Natural Resources

County of Fresno

DEPARTMENT OF AGRICULTURE
LES WRIGHT
AGRICULTURAL COMMISSIONER/
SEALER OF WEIGHTS & MEASURES

UPDATES
RODENTICIDES FOR SALE

For sale to and use only by Certified Applicators or persons under their direct supervision
And only for those uses covered by the Certified Applicator's certification

THE FOLLOWING PRODUCTS ARE AVAILABLE AT THE FRESNO OFFICE ONLY.
DISTRICT OFFICES DO NOT SELL RODENTICIDES!

THE BAIT SALES COUNTER HOURS ARE 8:00 AM-12:00 PM AND 1:00 PM-4:30 PM
PLEASE CALL AHEAD FOR ORDERS OVER 200 POUNDS.

PRODUCT NAME	PRODUCT TYPE	TARGET PESTS	PRICE	COMMENTS
Diphacinone. 01	Anticoagulant grain bait	Ground squirrels Deer mice House mice	$2.05 lb*	**Restricted Use** **Mechanical** **Broadcast only**
Diphacinone .005	Anticoagulant grain bait	Ground squirrels Norway rats Wood rats Muskrats Meadow mice Jack rabbits Cottontail rabbits Roof rats Chipmunks	$1.95 lb*	**Restricted Use** **Use in bait stations** ***AND*** **"Spot Baiting"**
Diphacinone .005	Ramik mini-bar Wax bait block	Norway rats Roof rats Wood rats House mice	N/A	**NOT CURRENTLY AVAILABLE**
Zinc phosphide 2%	Grain bait	Ground squirrels Norway rats Voles	$2.16 lb*	**RESTRICTED MATERIALS PERMIT REQUIRED**
Gas Cartridge	Fumigation	Ground squirrels Woodchucks	$2.21 ea*	
Clean Oats	Pre-baiting	All of the above	$ .38 lb*	

***Prices effective: 8/3/15**

Updated 8/3/15

RECOMMENDED GROUND SQUIRREL CONTROL PROGRAM

The control of ground squirrels in California is important in two ways. First, it is necessary to prevent destruction of agricultural crops and facilities. Second, it is important from a health standpoint where rodent-borne diseases have been demonstrated to be present.

Ground squirrels have enormous "come-back" powers. As long as an adequate food supply is available, their annual litters will average about six to eight young (16 embryos per litter in 1997). Therefore, a few years of neglect by the growers may create new centers of population which will reinfest clean areas. There are several essential steps to consider before control is undertaken:

1. The selection of a toxic grain bait if prebaiting indicates that the squirrels are taking grain.
2. If grain isn't readily taken, which fumigant will do the best job.
3. If grain or fumigation cannot be used, should trapping or shooting be implemented.

Below is a chart on ground squirrel activities throughout the year in Fresno County. These activity periods vary from year to year, as much as three or four weeks. The months of December through January are usually poor periods for control efforts due to the hibernation. February through April are fumigation months. Anticoagulant bait stations also work well in some instances during this period, provided that prebaiting indicates that squirrels are taking the grain. May through July are grain months. Large areas should be treated during this period to keep control costs at a minimum. August and September are the estivation months. During this period, the activity slows down following a few hot days and may continue two or more months, depending on the area. In some areas, a brief time during October or November, effective control measures may be applied with excellent results. The ultimate results of any rodent control program are entirely dependent on the effort expended by the person in charge of the job. It is essential that all phases of field work be carefully observed so that any changes in rodent activity, bait acceptance, and degree of kill will be noted. The comprehension of these factors will result in a high degree of efficiency, and ultimately, a more effective and economical control program.

From time to time during the year, it may be necessary to call the Fresno County Department of Agriculture to evaluate your ongoing program or to get advice on current ground squirrel control in your area. Call (559) 600-7510 if you have any questions or concerns.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
				ANTICOAGULANT POISON GRAIN .							
								ZINC PHOSPHIDE			
	FUMIGATION .										
HIBER.						ESTIVATION .					HIBER.

Due to climatic conditions (rain and temperature), the breeding may vary. Fluctuations in material application may occur 10 to 15 days in either direction of above periods.

VOLES (MEADOW MICE)

Integrated Pest Management for Home Gardeners and Landscape Professionals

Six species of voles from the genus *Microtus* occur in California. Collectively they are called either meadow mice or voles. Two species are responsible for the majority of damage. The California vole, *M. californicus*, is the most widespread vole in the state, found in the Owens and Central valleys and nearly the entire length of the coastal range. The montane vole, *M. montanus*, inhabits northeastern California and the eastern Sierra slope. Voles usually don't invade homes and shouldn't be confused with the house mouse, *Mus musculus*.

Voles are intriguing, small mammals, because some populations regularly go through cycles of low to high numbers with occasional, sudden increases that can send numbers soaring up to several thousand per acre.

IDENTIFICATION

Voles are mouselike rodents somewhat similar in appearance to pocket gophers (Fig. 1). They have a compact, heavy body, short legs, a short-furred tail, small eyes, and partially hidden ears. Their long, coarse fur is blackish brown to grayish brown. When fully grown they can measure 5 to 8 inches long, including the tail.

Although voles spend considerable time aboveground and you occasionally can see them scurrying about, they spend most of their time below ground in their burrow system. The clearest signs of their presence are the well-traveled, aboveground runways that connect burrow openings (Fig. 2). A protective layer of grass or other ground cover usually hides the runways. The maze of runways leads to multiple burrow openings that are each about 1 1/2 to 2 inches in diameter. You can locate the runways by pulling back overhanging ground cover. Fresh clippings of green grass and greenish-colored droppings about 3/16 inch long in the runways and near the burrows are further evidence of voles. With age, the droppings lose the green coloring and turn brown or gray.

BIOLOGY AND BEHAVIOR

Voles are active day and night, year-round. You'll normally find them in areas with dense vegetation. Voles dig many short, shallow burrows and make underground nests of grass, stems, and leaves. In areas with winter snow, voles will burrow in and through the snow to the surface.

Several adults and young can occupy a burrow system. The size of the burrow system and foraging area varies with habitat quality, food supply, and population levels, but in most cases it is no more than a few hundred square feet.

Vole numbers fluctuate from year to year, and under favorable conditions, their populations can increase rapidly. In some areas their numbers are cyclical, reaching peak numbers every 3 to 6 years before dropping back to low levels. Voles can breed any time of year, but the peak breeding period is spring. Voles are extremely prolific, with females maturing in 35 to 40 days and having 5 to 10 litters per year. Litter size ranges from 3 to 6 young. However, voles seldom live longer than 12 months.

Voles are mostly herbivorous, feeding on a variety of grasses, herbaceous plants, bulbs, and tubers. They eat bark and roots of trees, usually in fall or winter. Voles store seeds and other plant matter in underground chambers.

Figure 1. Vole (meadow mouse).

Figure 2. Meadow mouse runways connect numerous, shallow burrows.

Voles are poor climbers and usually don't enter homes or other buildings. Instead, they inhabit wildlands or croplands adjacent to buildings or gardens and landscaped sites with protective ground cover. Most problems around homes and gardens occur during outbreaks of vole populations.

DAMAGE

Voles cause damage by feeding on a wide range of garden plants including artichoke, beet, Brussels sprouts, cabbage, carrot, cauliflower, celery, lettuce, spinach, sweet potato, tomato, and turnip. They also can damage turf and other landscape plantings such as lilies and dichondra. Voles will gnaw the bark of fruit trees including almond, apple, avocado, cherry, citrus, and olive.

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Vole damage to tree trunks normally occurs from a few inches aboveground to a few inches below ground. If the damage is below ground, you will need to remove soil from the base of the tree to see it. Although voles are poor climbers, if they can climb onto low-hanging branches, they can cause damage higher up on trees as well.

Gnaw marks about 1/8 inch wide and 3/8 inch long in irregular patches and various angles along with other signs including droppings, runways, and burrows indicate vole damage. If voles gnaw completely around the trunk or roots, it will disrupt the tree's flow of nutrients and water, a process known as girdling. Girdling damage on trunks and roots can kill trees. Signs of partial trunk or root girdling can include a prolonged time before young trees bear fruit, reduced fruit yield, abnormal yellowish leaf color, and overall poor vigor. Where snow cover is present, damage to trees can extend a foot or more up the trunk. Damage that occurs beneath snow cover often escapes notice until it is too late.

LEGAL STATUS

The California Fish and Game Code classifies voles as nongame mammals, meaning if voles are injuring or threatening growing crops or other property, the owner or tenant of the property has permission to control them at any time and in any legal manner.

MANAGEMENT

To prevent vole damage, you need to manage the population in your area before it reaches high numbers. You often can achieve this by removing or reducing the vegetative cover, making the area unsuitable to voles. Removing cover also makes detecting voles and other rodents easier. Once vole numbers begin to increase rapidly, the damage they do to ornamental and garden plants and to trees can be quite severe.

Monitoring Guidelines

Be alert for the presence of voles. Look for fresh trails in the grass, burrows, droppings, and evidence of feeding in the garden and surrounding area. Pay particular attention to adjacent areas that have heavy vegetation, because such areas are likely sources of invasions.

Habitat Modification

One way to effectively deter vole populations is to make the habitat less suitable to them. Weeds, heavy mulch, and dense vegetative cover encourage voles by providing food and protection from predators and environmental stresses. If you remove this protection, their numbers will decline.

You can reduce the area from which voles can invade gardens or landscaped areas by regularly mowing, spraying with herbicides, grazing, or tilling grassy areas along ditch banks, right-of-ways, or field edges adjacent to gardens. If feasible, weed-free strips can serve as buffers around areas requiring protection. The wider the cleared strip, the less apt voles will be to cross and become established in gardens. A minimum width of 15 feet is recommended, but even that can be ineffective when vole numbers are high. A 4-foot-diameter circle around the base of young trees or vines that is free of vegetation or a buffer strip 4 feet or more along a row of trees can reduce problems, because voles prefer not to feed in the open.

Exclusion

Wire fences at least 12 inches above the ground with a mesh size of 1/4 inch or smaller will help to exclude voles from the entire garden. These fences either can stand alone or be attached to the bottom of an existing fence (Fig. 3). Bury the bottom edge of the fence 6 to 10 inches to prevent voles from tunneling beneath it. A weed-free barrier on the outside of the fence will increase its effectiveness.

Figure 3. Small mesh wire fence.

Figure 4. A plastic cylinder protects the trunk of this young tree from vole damage.

You can protect young trees, vines, and ornamentals from girdling by using cylinders made from hardware cloth, sheet metal, or heavy plastic that surround the trunk (Fig. 4). Support or brace these devices, so they can't be pushed over or pressed against the trunk. Also make sure they are wide enough to allow for tree growth and, in areas with snow, are tall enough to extend above snow level. Bury the bottom of the protective device below the soil

surface to prevent voles from digging beneath it. You can cut out both ends of individual milk cartons, tin cans, or plastic soda bottles and fit them over small plants. You'll want to frequently check protective devices to make sure meadow mice haven't gnawed through or dug beneath the cylinders and are hiding inside the tree guard while they feed on the tree.

Trapping

When voles aren't numerous or when the population is concentrated in a small area, trapping can be effective. Use a sufficient number of traps to control the population. For a small garden a dozen traps is probably the minimum number required, but for larger areas, you might need 50 or more. You can use a simple, wooden mouse trap baited with a peanut butter-oatmeal mixture or apple slices, although often you won't need to use bait, because voles will trigger the trap as they pass over it.

Trap placement is crucial. Voles seldom stray from their runways, so set traps along these routes. Look for burrows and runways in grass or mulch in or near the garden. Place the traps at right angles to the runways with the trigger end in the runway. Examine traps daily, removing dead voles or resetting sprung traps as needed. Continue to trap in one location until you stop catching voles then move the trap to a new location 15 to 20 feet away. Destroy old runways or burrows with a shovel or rototiller to deter new voles from immigrating to the site.

Bury dead voles, or place them in plastic bags in the trash. Because voles can carry infectious pathogens or parasites, don't handle them without rubber gloves; you can use a plastic bag slipped over your hand and arm as a glove. Once you have removed the vole from the trap, hold it with your "bagged" hand and turn the bag inside out while slipping it off your arm and hand. Be sure to keep small children and pets out of areas where you have set traps.

Baiting

When voles are numerous or when damage occurs over large areas, toxic baits can be the quickest and most practical means of control. Take necessary measures to ensure the safety of children, pets, and nontarget animals, and follow all product label instructions carefully.

Anticoagulants, often referred to as multiple-feeding baits, interfere with an animal's blood-clotting mechanisms, eventually leading to death. They probably are the safest type of rodent bait for use around homes and gardens, because they are slow acting, must be consumed during a period of 5 or more days to be effective, and have an effective antidote, vitamin K_1, making it safer to use around children and pets. Anticoagulant baits are available at some county agriculture commissioners' offices as well as at retail stores.

You can't use some anticoagulants such as brodifacoum and bromadiolone because of the potential risk they pose to predators such as cats and dogs. Check the label carefully to ensure it lists that the bait is suitable for use on voles or meadow mice.

Because the pest must feed on anticoagulant baits during a period of 5 days, the bait must be available until the vole population is under control. Usually baiting every other day for a total of 3 applications is effective. As with trapping, bait placement is very important. Place the recommended amount of bait in runways or next to burrows, so voles will find it during their normal travels. Generally, spot treating—placing bait in a specific place, such as a runway—is the preferred method of baiting, but in areas of heavy ground cover or if the area you are treating is quite large, broadcasting might be a better option if the label allows it. When broadcasting bait, be sure to spread it evenly over the infested area. If you use this technique, you probably will have to broadcast every other day for a total of 3 or 4 applications.

Repellents

Commercial repellents are available for protecting plants from voles, but their effectiveness is questionable and their use often isn't practical. You must apply them before damage occurs. Voles usually damage plants at or just beneath the soil surface, making adequate coverage difficult or impossible. Don't apply repellents to food crops unless the product label specifies such use.

Natural Control

Many predators including coyotes, foxes, badgers, weasels, cats, gulls, and especially hawks and owls eat voles. However, in most cases predators can't keep vole populations below damaging levels. Many predators simply don't hunt close to homes and gardens where control is needed. Most predators have a broad-based diet and readily shift to alternative prey when the number of voles declines. Predators rarely, if ever, take every last vole; thus, a residual population remains. With their extremely high reproductive potential, any remaining voles could repopulate an area in a short period. With this potential for severe damage, a homeowner or gardener can't afford to wait for a predator to appear but must take immediate action to prevent the loss of valuable plantings. Effective, immediate action usually involves baiting or trapping and habitat modification.

As with all animals, natural constraints limit vole numbers. Because populations won't increase indefinitely, one alternative is to do nothing, and let nature limit the voles. Experience has shown, however, that around homes and gardens the natural population peak is too high, and damage will be above tolerable limits.

Other Control Methods

Burrow fumigants such as gas cartridges aren't effective for controlling voles, because their burrow system is shallow and has numerous open holes. Commercial pest control operators can use the fumigant aluminum phosphide under very limited conditions. Electromagnetic or ultrasonic devices and flooding also are ineffective against voles.

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To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned.

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University of California
Agriculture and Natural Resources Program

February 1, 2019

Camila Goetze
Solar Development Manager
E.ON Climate & Renewables NA
20 California St., Suite 500
San Francisco, CA 94111

Subject: **Results of Groundwater and Irrigation Suitability Review for the Fifth Standard Solar Complex Project Site, Huron, Fresno County**

Dear Ms. Goetze:

At your request, ICF Jones & Stokes, Inc. (an ICF International company hereafter referred to as ICF), in association with Jacobson James & Associates, Inc. (JJ&A), has prepared this Groundwater and Irrigation Suitability Review for the Fifth Standard Solar Complex (the project site). It is our understanding that the County of Fresno Department of Public Works and Planning, Development Services and Capital Projects Division (the County), is processing a Conditional Use Permit application for the project site for installation of a utility-scale solar facility. EC&R Solar Development, LLC (hereafter referred to as EC&R), the applicant, has submitted a petition to the County to remove the project site from its Williamson Act contracts, which would allow for the establishment of the solar facility on the site.

Purpose and Scope of Review

Although the petition is based on multiple factors, the focus of our review was on the project site's groundwater quantity and quality and irrigation infrastructure, as requested by EC&R. The purpose of our review was to provide an independent opinion on the suitability of the groundwater for irrigating agricultural crops typically grown in the site vicinity and whether the groundwater quality or potential future reduction in quantity places limitations on crops that could be grown on the site.

ICF has conducted this independent review to determine if the groundwater and irrigation data that was used, the evaluation approach, and the findings submitted in support of EC&R's petition in support of canceling the Williamson Act contracts at the site were valid and consistent with industry standard practices. Our review was also directed at determining whether suitable and sufficient information on groundwater quantity and quality was provided in support of the petition and evaluating the agronomic viability of the site in relation to irrigation water.

The review entailed the ICF team critically examining the following materials in support of our review:

1. Documents submitted to the County of Fresno in support of the petition to cancel the Williamson Act contracts (ESA 2018a, 2018b).
2. Letter from County of Fresno regarding outstanding issues associated with the project Environmental Impact Report (County of Fresno 2018).
3. Woolf Farming Company parcel ownership map (Woolf Farming Company 2019a).
4. Water quality and pumping data for onsite wells (Woolf Farming Company 2019b, Woolf Farming Company undated).
5. Westlands Water District (WWD) irrigation distribution system map (WWD 2012).
6. Results of soil chemical analyses for seven onsite soil samples and recommendations for amendments (Pacific Agronomics 2018).
7. Irrigation system layout map (reviewed with Woolf Farming Company during ICF's site visit).
8. Pump test reports for Woolf Farming Company wells 27-1, 27-2, and 28-2 provided by Woolf Farming Company (Hartwig 2019b). (Well 34-4 pump test data was not provided because of technical issues associated with the well head construction).

The ICF team also reviewed recent aerial imagery (in Google Earth Pro) and USDA Natural Resources Conservation Service soil survey data (Soil Survey Staff 2019) to gain a general understanding of site characteristics.

In addition to the review of existing documents, three members of the ICF team (consisting of a senior scientist, a Professional Geologist/Engineer, and a senior agronomist/Certified Crop Advisor), accompanied by a representative from Woolf Farming Company, conducted a site visit on January 21, 2019, to review the irrigation infrastructure, including general condition, site layout, wells, irrigation delivery and tailwater recovery systems, and grade/drainage of fields.

Limitations of Review

In performing our professional services, we have attempted to apply current engineering and scientific judgment and exercise a level of effort consistent with the current standard of practice for similar types of studies. The analyses and interpretations presented in this report have been developed based on the data and information presented in the petition and provided by the project site owner and on the observations made during the site visit. In addition, readily available public information pertaining to the project site water supply sources (surface water and groundwater) was considered[1]. No original research, nor review or compilation of supplemental data on the site's

[1] The publically available sources of information reviewed for this evaluation include: 1) Westlands Water District web-based information regarding water supply; 2) U.S. Department of Interior, Bureau of Reclamation, web-based information regarding water supply in the Westside Subbasin, and 3) California Department of Water Resources web-based information regarding Westside Subbasin aquifer conditions.

irrigation infrastructure or water quality, was performed as part of the scope of services. No warranty, express or implied, is made regarding the review, interpretations, or comments.

General Site Description

The 1,594-acre project site (hereafter referred to as the site) is located two miles south of Huron, California, in an unincorporated part of Fresno County. As shown on Figure 1, ten parcels comprise the site. West Tractor Avenue and West Phelps Avenue extend east-west across the northern and southern parts of the site, respectively. South Trinity Avenue extends north-south in the western part. All roads in the interior of the site are unimproved. Lassen Avenue (California State Route 269) borders the eastern side of the site and is the only improved road in the immediate vicinity of the site.

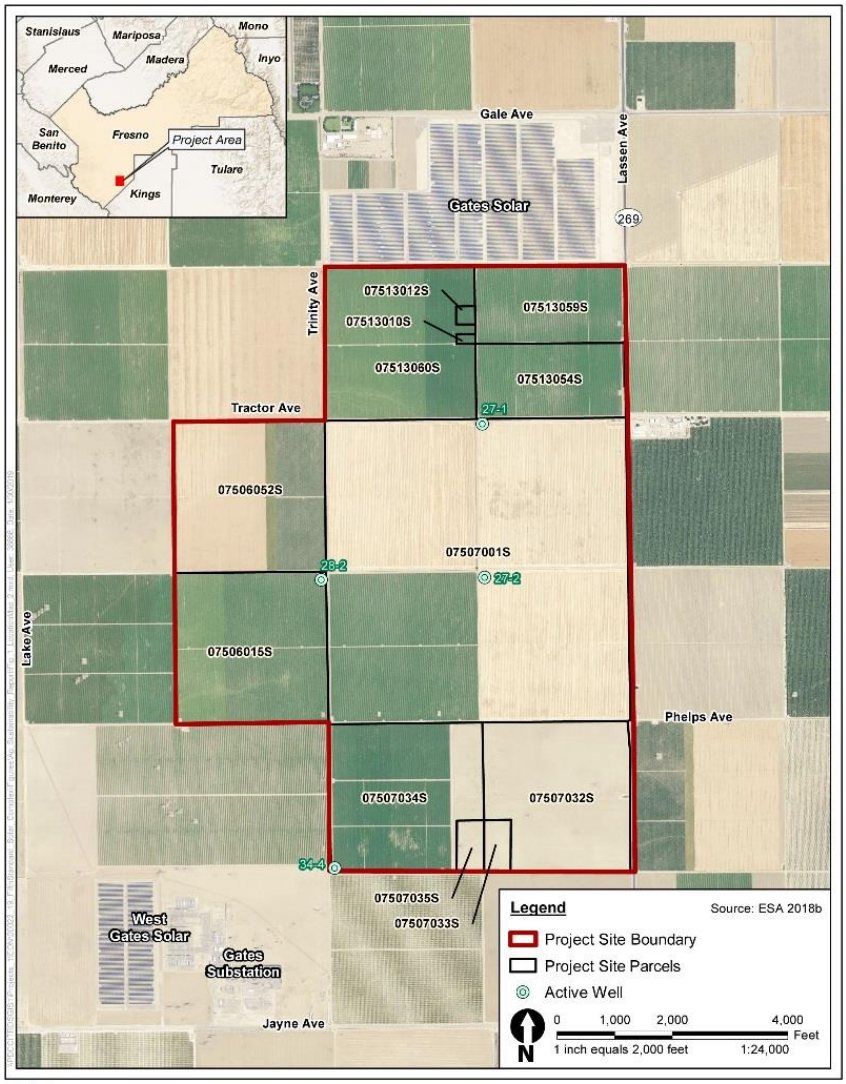


Figure 1
Fifth Standard Solar Complex Project Site Parcels and Well Locations

The USDA Natural Resources Conservation Service mapped approximately 93% of the soils on the site as Westhaven loam, 0 to 2% slopes. The Westhaven series consists of very deep, well drained, moderately slow permeability soils that formed in stratified, mixed alluvium. The mean annual precipitation is approximately seven inches. The frost-free season is 240 to 300 days. The total plant-available water is 11.9 inches. The irrigated Capability Class is 1, indicating that the soils have slight limitations that restrict their use (Soil Survey Staff 2019).

The remaining soils (7% of the site) are mapped as Excelsior sandy loam, sandy substratum, 0 to 2%slopes. The Excelsior series consists of very deep, well drained, moderate to slowly permeability soils that formed in mixed alluvium. The mean annual precipitation is approximately seven inches. The frost-free season is 240 to 300 days. The total plant-available water is 7.7 inches. The irrigated Capability Class is 2-s4, indicating that the soils have moderate limitations that reduce the choice of plants or require moderate conservation practices and that there are limitations within the rooting zone, such as shallowness of the rooting zone, stones, low moisture-holding capacity, low fertility that is difficult to correct, and salinity or sodium content (Soil Survey Staff 2019).

The site is used entirely for agriculture (since 2015, mostly used to produce tomatoes and wheat) and is classified as Prime Farmland (ESA 2018a).

The site's recent crop rotation of tomatoes followed by wheat is typical of the region. The tomato beds are irrigated with subsurface drip, and the source of the irrigation water is a mix of surface water piped-in from the irrigation district or from on-farm wells. In the case of wheat, sprinklers are used to irrigate the crop (Hartwig pers. comm. 2019a).

Review Description and Findings

The ICF team's opinion is that the groundwater quantity and quality conditions presented in the petition to remove the project site from its Williamson Act contracts are valid and consistent with industry standards. The data and information used as the basis for the opinions presented in the petition were reviewed and appear to be accurate and applicable.

The following sections provide a summary of the data and information reviewed, and as well as our findings.

Irrigation Infrastructure Evaluation

Surface water is the primary water source for the project site and is currently provided to the project site by Westlands Water District (WWD) Lateral Line PV-9, which originates to the west of the site at the Coalinga Canal. There is one WWD turnout each on Parcels 28-2, 27-3, and 34-4, for a total of three turnouts to service the project site (as indicated in Attachment B of the letter to Fresno County in response to the petition submittal [ESA 2018b]). The petition (ESA 2018a) states that "…of the approximately 1,594 acres being petitioned for cancellation, 949 acres, or approximately 60% of these acres, do not have 'turnouts' (irrigation system connections) to the WWD laterals

serving the site location, meaning that they lack the necessary infrastructure to deliver surface water to crops efficiently."

Woolf Farming has invested in its own permanent irrigation infrastructure, consisting of buried steel and poly-vinyl chloride (PVC) piping. This permanent infrastructure includes additional turnouts that service Parcels 22-2, 22-3, 26-1, 27-1, and 27-4. Woolf Farming Company also has additional temporary irrigation lines (aluminum and "lay-flat" piping) that can be employed as needed. The temporary irrigation lines can be employed to service Parcels 27-2 and 34-1.

Groundwater is also used as an irrigation source when surface water is insufficient or unavailable. The irrigation infrastructure appears to be constructed and suitable for effectively supporting the delivery and distribution of groundwater (in addition to surface water) for irrigation use.

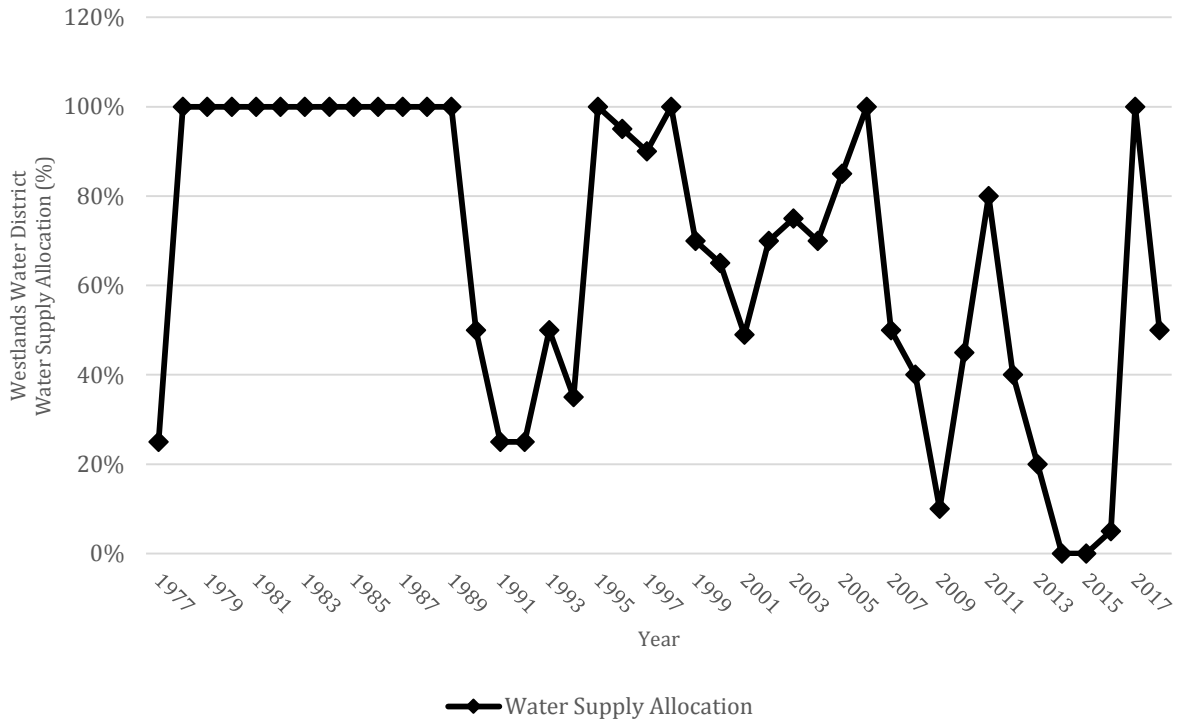
The combination of WWD and Woolf Farming irrigation infrastructure allows for the effective distribution of surface and/or groundwater throughout the project site. Distribution of irrigation water is not the primary factor limiting the project site use for agricultural purposes; the limitation is the quantity and quality of irrigation water.

Water Supply and Quality Evaluation

Surface-Water Availability. Surface water for the project site is provided by WWD via allocation from the Central Valley Project (CVP), a water storage and distribution system operated by the U.S. Bureau of Reclamation (USBR). The WWD obtains a fixed allocation from the CVP through a series of long-term contracts, which it redistributes on a prioritized basis to farms and municipalities. WWD has annual contracts for about 1,500,000 acre-feet of surface water for environmental, irrigation, and municipal/industrial use. At present, WWD expects to receive 50% of its contractual water from the CVP in an average year (USBR 2018, WWD 2019a).

Farms located at the downstream end of WWD's delivery system are allocated water on a prioritized basis, with contract farms, such as the project site, being last in line for water delivery. The information provided by the petitioner (ESA 2018a) accurately depicts the last ten years, as well as the current state of conditions with respect to surface-water supply, based on data from WWD (WWD 1996, WWD 2012). This information shows that the project site has received its fully allocated surface-water supplies only four times in the last 29 years (Figure 2).

Figure 2
Westlands Water District
Surface Water Supply Allocations



Regarding future deliveries, the potential effects of global climate change on water storage in the Sierra Nevada snowpack suggests that future water supply will be reduced and/or unavailable for irrigation (USBR 2008).

The petition contends that future surface-water supply overall, based on recent-history water deliveries and the generally accepted effects of climate change on California, will be limited and likely curtailed further. Consequently, removal of the project site will allow more efficient and economical irrigation of the remaining farm acreage with the diminishing water supply. ICF concludes that the petitioner's analysis and the data presented regarding the limitations of current and future surface-water availability appear to be valid and reasonable.

Groundwater Availability. According to the petition, groundwater has been used extensively over the past 10 years to supplement reduced deliveries from the WWD. In some years, due to the lack of surface water, 100% of the water needs for the project site would have been supplied by pumping groundwater from four irrigation wells located proximal to the project site. Except for four years, in the period from 1990 to 2018, groundwater was either the primary (50% or more) and at times, the only source of water for irrigation (WWD 2019b). The reliability of surface water to the project site, as the petitioner explains, has been limited at best, with the only viable alternative being groundwater.

With the implementation of the California Sustainable Groundwater Management Act (SGMA), the future availability of groundwater in adequate measure is uncertain. The State of California has determined that the Westside Subbasin is critically overdrafted (CDWR 2016), which requires that a Groundwater Sustainability Plan be implemented by 2020. To replace 100% of the project-site irrigation demand with groundwater requires roughly 2 ac-ft/ac for the project site (WWD 2013). However, WWD has identified a sustainable groundwater yield of approximately 135,000 to 200,000 acre-ft/year in the Westside Subbasin (WWD 1996, WWD 2019b), which equates to approximately 0.5 ac-ft/ac for all irrigated lands in the WWD, indicating that the project-site irrigation-water demand would exceed the projected sustainable groundwater yield of the entire Westside Subbasin.

The petition contends that probable future groundwater availability, based on WWD analysis and required SGMA groundwater management for the critically overdrafted Westside Subbasin, will be insufficient to augment the already curtailed surface-water supply. Consequently, removal of the project site will allow a greater flexibility in augmenting reduced surface water with the supply limits that will likely be placed on groundwater use.

ICF concludes that the petitioner's analysis and the data presented regarding the limitations of current and expected future groundwater supplies appear to be reasonable and valid.

Irrigation Water Quality. As described above, the site receives surface water from WWD. Farms in the district are allocated predetermined quantities of water that varies year to year (WWD 2013). In recent years, the allocated amount has been significantly less than the full allocation (WWD 2019b). To supplement its water needs when it does not receive its full allocation, Woolf Farming Company utilizes on-farm wells.

The physical characteristics of the wells and aquifer create chemical imbalances in the well water, which can constrain plant growth and make production of crops like tomatoes less economically viable. The most notable imbalance is the resulting elevated levels of electrical conductivity (EC) in soil (a measure of salinity) (Pacific Agronomics 2018), which is a common condition among the soils on the Westside. Depending on the crop, elevated soil salinity can reduce yields of salt-sensitive crops. Consequently, additional management measures, such as supplemental applications of water, fertilizer, and amendments, may be required. Tomato crop yields begin to decline at a soil EC of 2.5 decisiemens per meter (Western Plant Health Association 2002). Based on the laboratory soil analyses conducted for the site (Pacific Agronomics 2018), the soils have EC values that range from 1.8 to 3.4 decisiemens per meter, indicating that some of the site parcels could experience reduced yields as a result of elevated salinity.

With the reduction in water allocation from the WWD, the most common method of soil-salt management (i.e., application of high quantities of surface water to flush the salts to below the root zone) is not a likely option.

The soil and water testing results presented in the petition are consistent with ICF's agronomic analysis of the data and interpretations. Namely, that lacking the full water allocation from the WWD, Woolf Farming Company's only option is to supplement shortfalls in its WWD allocation with groundwater to irrigate its crops. Due to its elevated salinity levels, use of groundwater presents challenges to the profitable production of crops.

ICF concludes that the petitioner's analysis and the data presented regarding the limitations of the irrigation water quality in relation to the crops that are typically grown in the project site vicinity appear to be reasonable and valid.

Data Review. The ICF team reviewed the data reports of water quality testing (ESA 2018a) and confidential well/pump performance tests provided by Woolf Farming Company (Hartwig 2019b).

Pacific Agronomics' agriculture laboratory (VPN Laboratory) participates in the North American Proficiency Testing Program (NAPT). The NAPT is a Soil Science Society of America program that assists agricultural laboratories in their evaluations of soil, plant, and water analyses through inter-laboratory sample exchanges and statistical evaluations of analytical data. The NAPT program provides guidelines developed for the agricultural industry, which includes developing standardized test methods for the industry. In addition, the ICF team contacted the laboratory to determine if the NAPT program was being used and the team checked the NAPT directory for the laboratory's listing. The VPN Laboratory director confirmed that they are participants and the NAPT directory lists the laboratory as a participant.

ICF believes that the laboratory data included in the petition was prepared in conformance with standard practices for the agricultural industry. In addition, because the water tests were performed at the Woolf Farming Company project site, the data provided is likely the best available information at this time.

Well/pump testing data provided by Woolf Farming Company (Hartwig 2019b) was reviewed and appears to be consistent with industry practice for well and pump tests. The well/pump performance test was conducted by United Pump Testing of Fresno. United Pump Testing is an authorized advisor in Pacific Gas & Electric Company's Advanced Pumping Efficiency Program (APEP). PG&E subsidizes ADEP testing, which is intended to improve overall well performance and efficiency for energy conservation in California. In addition, the ICF team contacted United Pump Testing and confirmed that the Woolf Farming Company wells were tested in conformance with the PG&E program and industry practices.

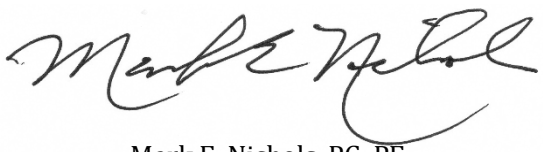
Based on the data presented in the pumping test reports and United Pump Testing's participation in the ADEP, ICF believes that the testing and analyses were performed in conformance with industry standards and that the information is currently the best available for the project site.

Conclusion

The review conducted and described herein was performed to evaluate specific arguments put forth by the petition for a conditional-use permit at the project site. Based on the information presented in the petition, ICF and JJ&A believe the statements regarding water supply (surface and groundwater) and water quality (groundwater) are accurate and reasonable. Our review of the question of limits on project-site infrastructure suggests this argument has little influence on the current or future use of the project site. Overall, however, we believe that with respect to the review presented herein, the petition is valid and reasonable.

ICF and JJ&A appreciate the opportunity to prepare this review. Please feel free to contact Joel Butterworth at 707-938-8954 if you have any questions.

Sincerely,



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