INITIAL STUDY/
MITIGATED NEGATIVE DECLARATION

AQUAMARINE SOLAR PROJECT AND GEN-TIE LINE

CUP 17-04

Kings County Community Development Agency

May 2019

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ACRONYMS AND ABBREVIATIONS

AB 32	Assembly Bill 32 (California Global Warming Solutions Act of 2006)
AC	alternating current
AADT	Annual Average Daily Traffic
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
AF or af	acre-feet
AFY or afy	acre-feet per year
AMP	Agriculture Management Plan
APN	Assessor's Parcel Number
BMPs	best management practices
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CDA	Community Development Agency
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CGS	California Geological Survey
CNDDB	California Natural Diversity Data Base
CNEL	community noise equivalent level
CO2e	Carbon Dioxide Equivalents
CRHR	California Register of Historical Resources
CVP	Central Valley Project
CWA	Clean Water Act
CWML	Chemical Waste Management Landfill
cy	cubic yards
dB	decibels
dBA	decibels in "A-weighted" scale
DC	direct current
DOC	California Department of Conservation
DOC	Department of Defense
DPR	California Department of Pesticide Regulation
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EIR	Environmental Impact Report
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
FSZ	Farmland Security Zone
g	gravity - unit of ground acceleration; 1.0 g = force of gravity
GHG	greenhouse gas
gpd	gallons per day

ACRONYMS AND ABBREVIATIONS (Cont'd)

GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCP	Habitat Conservation Plan
HMBP	Hazardous Materials Business Plan
I&R	Illingworth & Rodkin
IS/MND	Initial Study/Mitigated Negative Declaration
ISR	Indirect Source Review
JLUS	Joint Land Use Study (NAS Lemoore)
JLUSPC	JLUS Policy Committee
KCAG	Kings County Association of Governments
KCFD	Kings County Fire Department
KCSD	Kings County Sheriff's Department
KCDEHS	Kings County Division of Environmental Health Services
kV	kilovolt (unit of electrical potential)
KWRA	Kings Waste and Recycling Authority
L_{dn}	day-night average noise level
L_{eq}	equivalent hourly average noise level
L_{max}	maximum instantaneous noise level
LOA	Live Oak Associates
LOS	Level of Service
M&I	Municipal and Industrial (water supply)
MBTA	Migratory Bird Treaty Act
MM	Mitigation Measure
MMT	Million Metric Tons
MND	Mitigated Negative Declaration
MTA	Moore Twining Associates
MW	Megawatt
NAHC	Native American Heritage Commission
NASL	Naval Air Station Lemoore
NIOSH	National Institute for Occupational Safety and Health
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O&M	operations and maintenance
OPR	Governor's Office of Planning and Research
PEIR	Program (or Programmatic) Environmental Impact Report
PG&E	Pacific Gas and Electric Company
PPA	Power Purchase Agreement
PPV	Peak Particle Velocity (vibration measure)
PRC	California Public Resources Code
PV	photovoltaic
ROW	Right of Way

ACRONYMS AND ABBREVIATIONS (Cont'd)

RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SGF	Solar Generating Facility
SHPO	State Historic Preservation Office
SJVAPCD	San Joaquin Valley Air Pollution Control District
SoCalGas	Southern California Gas Company
SR	State Route
SSC	species of special concern
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCP	Traditional Cultural Place
TCR	Tribal Cultural Resource
USA	Underground Service Alert
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	vibration velocity level in decibels
VMT	Vehicle Miles Traveled
WSA	Water Supply Assessment
WSP	Westlands Solar Park
WWD	Westlands Water District

CHAPTER 1 – INTRODUCTION

1.1 PREPARATION OF AN IS/MND UNDER CEQA

This document is an Initial Study and Mitigated Negative Declaration (IS/MND) prepared pursuant to the California Environmental Quality Act (CEQA) for the proposed Aquamarine Solar Project and Gen-Tie Line. This MND has been prepared in accordance with the CEQA, Public Resources Code Sections 21000 et seq., and the State CEQA Guidelines.

An Initial Study is conducted by a lead agency to determine if a project may have a significant effect on the environment. In accordance with the CEQA Guidelines, Section 15064, an Environmental Impact Report (EIR) must be prepared if the Initial Study indicates that the proposed project under review may have a potentially significant impact on the environment. A Negative Declaration may be prepared instead, if the lead agency prepares a written statement describing the reasons why a proposed project would not have a significant effect on the environment, and, therefore, why it does not require the preparation of an EIR (CEQA Guidelines Section 15371). According to CEQA Guidelines Section 15070, a Negative Declaration shall be prepared for a project subject to CEQA when either:

a) The Initial Study shows there is no substantial evidence, in light of the whole record before the agency, that the proposed project may have a significant effect on the environment, or

b) The Initial Study identified potentially significant effects, but:

(1) Revisions in the project plans or proposals made by or agreed to by the applicant before the proposed negative declaration is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

(2) There is no substantial evidence, in light of the whole record before the agency, that the proposed project as revised may have a significant effect on the environment.

If revisions are adopted into the proposed project in accordance with the CEQA Guidelines Section 15070(b), a Mitigated Negative Declaration is prepared. This document includes such revisions in the form of mitigation measures. Therefore, this document is a Mitigated Negative Declaration and incorporates all of the elements of an Initial Study. Hereafter this document is referred to as an MND.

1.2 THIS MND IS TIERED FROM THE PROGRAM EIR ON THE WESTLANDS SOLAR PARK MASTER PLAN AND GEN-TIE CORRIDORS PLAN

The Aquamarine Solar Project is located within the Westlands Solar Park (WSP), a master planned solar complex covering approximately 20,938 acres in west-central Kings County. The WSP Master Plan and Gen-Tie Corridors Plan was prepared by the Westlands Water District (WWD) to provide policy guidance for the reuse of retired farmlands owned by WWD, which comprise approximately half of the Master Plan area. In compliance with State CEQA Guidelines Section 15168, the WWD prepared a Program EIR (PEIR) (SCH No. 2013031043) which addressed the potential environmental impacts associated with future solar development under the WSP Master Plan and Gen-Tie Corridors Plan. The PEIR also addressed the potential impacts associated with the planned gen-tie corridor extending from the WSP to the Gates substation to the west, which is required for the transmission of WSP solar generation to

the State electrical grid. On January 16, 2018, the WWD Board of Directors certified the PEIR under CEQA and approved the WSP Master Plan and Gen-Tie Corridors Plan as a WWD policy document.

The PEIR on the WSP Master Plan and Gen-Tie Corridors Plan (hereafter "WSP Master Plan PEIR") was prepared in close coordination with the staff of the Kings County Community Development Agency (CDA), in recognition of the County's role as a responsible agency for the approval of Conditional Use Permits (CUPs) for individual solar generating facilities (SGFs) to be developed within the WSP Master Plan area. This approach was intended by both WWD and Kings County CDA to provide for the tiering of subsequent MNDs from the PEIR, as provided under CEQA Guidelines Section 15168 (see "Tiering under CEQA" below for further discussion). The Draft PEIR incorporated all revisions requested by the Kings County CDA with the express purpose of making the PEIR consistent with County practices, and thus facilitating the ability of the Kings County Planning Commission to adopt subsequent MNDs that would be tiered from the certified PEIR. This would also enable the certified PEIR to be incorporated by reference into the subsequent MNDs prepared by Kings County (per CEQA Guidelines Section 15150), and would enable the Planning Commission's consideration of the contents of the certified PEIR when adopting the subsequent MNDs for solar projects proposed within the WSP Master Plan area.

TIERING UNDER CEQA

The concept of tiering is addressed in CEQA Guidelines Sections 15152 and 15168(c). "Tiering" refers to the coverage of general environmental matters in broad, program- or plan-level EIRs, such as the WSP Master Plan PEIR, with subsequent focused environmental documents prepared for individual projects that implement the program or plan. The project environmental document incorporates by reference the broader discussions in the Program EIR and concentrates on project-specific issues. The CEQA Statutes and the Guidelines encourage the use of tiered environmental documents to reduce delays and excessive paperwork in the environmental review process. This is accomplished in tiered documents by eliminating repetitive analyses of issues that were adequately addressed in the Program EIR and by incorporating those analyses by reference.

The Program EIR evaluated the environmental impacts of the WSP Master Plan to the greatest extent possible. Tiering allows subsequent environmental review to rely on the WSP Master Plan PEIR for the following:

- A discussion of general background and setting information for environmental topic areas;
- Overall growth-related issues;
- Issues that were evaluated in sufficient detail in the Program EIR and for which there is no significant new information or change in circumstances that would require further analysis; and
- Long-term cumulative impacts.

Subsequent tiered environmental documents should incorporate relevant information from the WSP Master Plan PEIR including:

- A summary of background (setting information);
- Identification of applicable standards of significance; and
- Identification of applicable impacts and mitigation measures.

LEAD AGENCY

The WWD was the CEQA Lead Agency responsible for preparation and certification of the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan PEIR. As mentioned, Kings County is a Responsible Agency under CEQA for purposes of the PEIR since the County is responsible for the approval of Conditional Use Permits for individual solar projects proposed within the WSP Master Plan area. Since the planned Gen-Tie Line to the Gates Substation is intended to be privately owned, and therefore not subject to CPUC jurisdiction, Kings County will also be responsible for approval of the segment of the proposed Gen-Tie Line within Kings County as proposed under the subject Conditional Use Permit application.

Under CEQA Guidelines Section 15096(a), a Responsible Agency complies with CEQA by considering the EIR or MND prepared by the Lead Agency and by reaching its own conclusions on whether and how to approve the project involved. This provides for the Kings County Planning Commission's consideration of the WSP Master Plan and Gen-Tie Corridors Plan PEIR in the course of its CEQA review of subsequent solar projects and gen-tie line covered by the PEIR.

Under CEQA Guidelines Section 15052, a Responsible Agency may assume the role of Lead Agency if it finds that further environmental documentation is required under CEQA in conjunction with a subsequent project-specific approval within its purview. This provides for Kings County's preparation of a subsequent MND that is tiered from the Program EIR for purposes of CUP approval.

In summary, the CEQA Guidelines provide for Kings County's preparation of an MND for the Aquamarine Solar Project and Gen-Tie Line, as a tiered and subsequent environmental document to the Program EIR on the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan. Under CEQA, Kings County may also incorporate by reference certain information and evaluation contained in the Program EIR that is applicable to the Aquamarine Solar Project and Gen-Tie Line, although the MND must include a summary of background/setting information, identification of standards of significance, and discussion of project-specific impacts and mitigation measures. The information and evaluation that is incorporated by reference is not required to be repeated or duplicated in the MND, provided the Planning Commission considers the contents of the Program EIR in making its decision to adopt the MND.

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CHAPTER 2 – DESCRIPTION OF THE PROPOSED PROJECT

2.1 BACKGROUND INFORMATION

1. Project Title

Aquamarine Solar Project and Gen-Tie Line
Kings County Conditional Use Permit File No: CUP 17-04.

Assessor's Parcel Nos:

Section 9	Section 15	Section 16		
026-010-057	026-260-04	026-290-08	026-290-42	026-290-72
026-010-058	026-260-09	026-290-10	026-290-46	026-290-73
026-010-059	026-260-34	026-290-12	026-290-50	026-290-74
026-010-040		026-290-26	026-290-51	026-290-75
		026-290-27	026-290-57	026-290-76
		026-290-32	026-290-59	026-290-77
Section 14	**Section 22**	026-290-33	026-290-63	026-290-78
026-260-37	026-260-28			026-290-79

2. Lead Agency Name and Address

Kings County Community Development Agency
1400 West Lacey Boulevard, Building #6
Hanford, CA 93230

3. Contact Person, Phone Number, and Email Address

Chuck Kinney, Deputy Director – Planning
559-852-2670
Chuck.Kinney@co.kings.ca.us

4. Project Location

The 1,825-acre Aquamarine Solar Project site is generally located to the southeast of Avenal Cutoff Road, and is centered on the junction of Laurel Avenue and the 25th Avenue alignment in central Kings County. The Gen-Tie Line is planned to run from the Aquamarine project site southward along the 25th Avenue alignment to Nevada Avenue, where it will turn west and run adjacent to the north side of Nevada Avenue to the Fresno County line (see Figure 1 – Regional Location, Figure 2 – Project Overview, and Figure 3 – Project Vicinity). The Gen-Tie Line will run entirely within easements acquired through private property alongside the County roadway right-of-way except where it crosses public roadways.

5. Project Sponsor's Name and Address

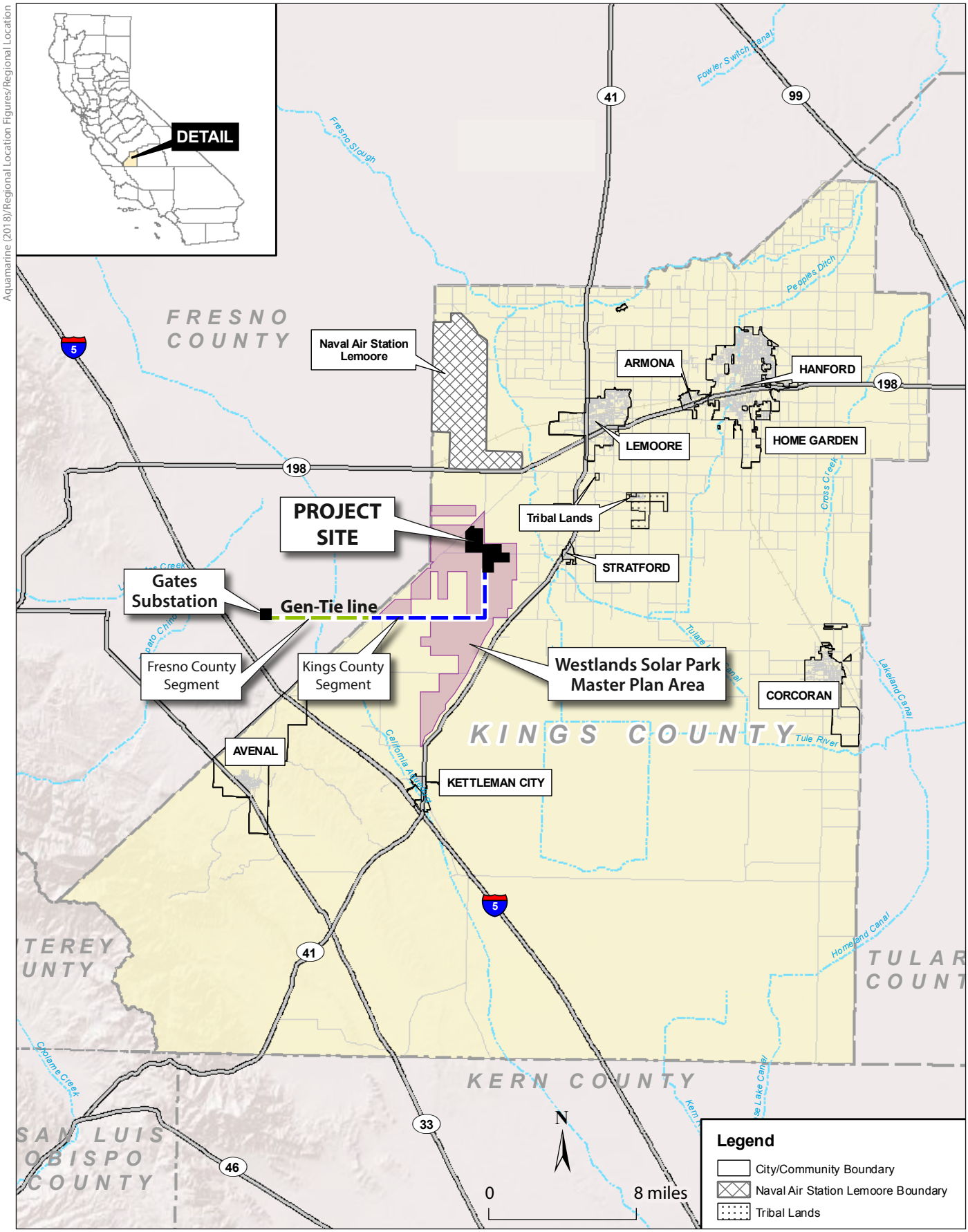
Westlands Aquamarine, LLC
Robert G. Dowds, Manager
4700 Wilshire Boulevard
Los Angeles, CA 90010
Contact: Mohammed T. Kabir

6. General Plan Designation

The 2035 Kings County General Plan designates the eastern and northeastern 754 acres of the project site as "Exclusive Agriculture – 40 acre," and the remaining 1,071 acres of the site as "General Agriculture – 40 acre."

7. Zoning

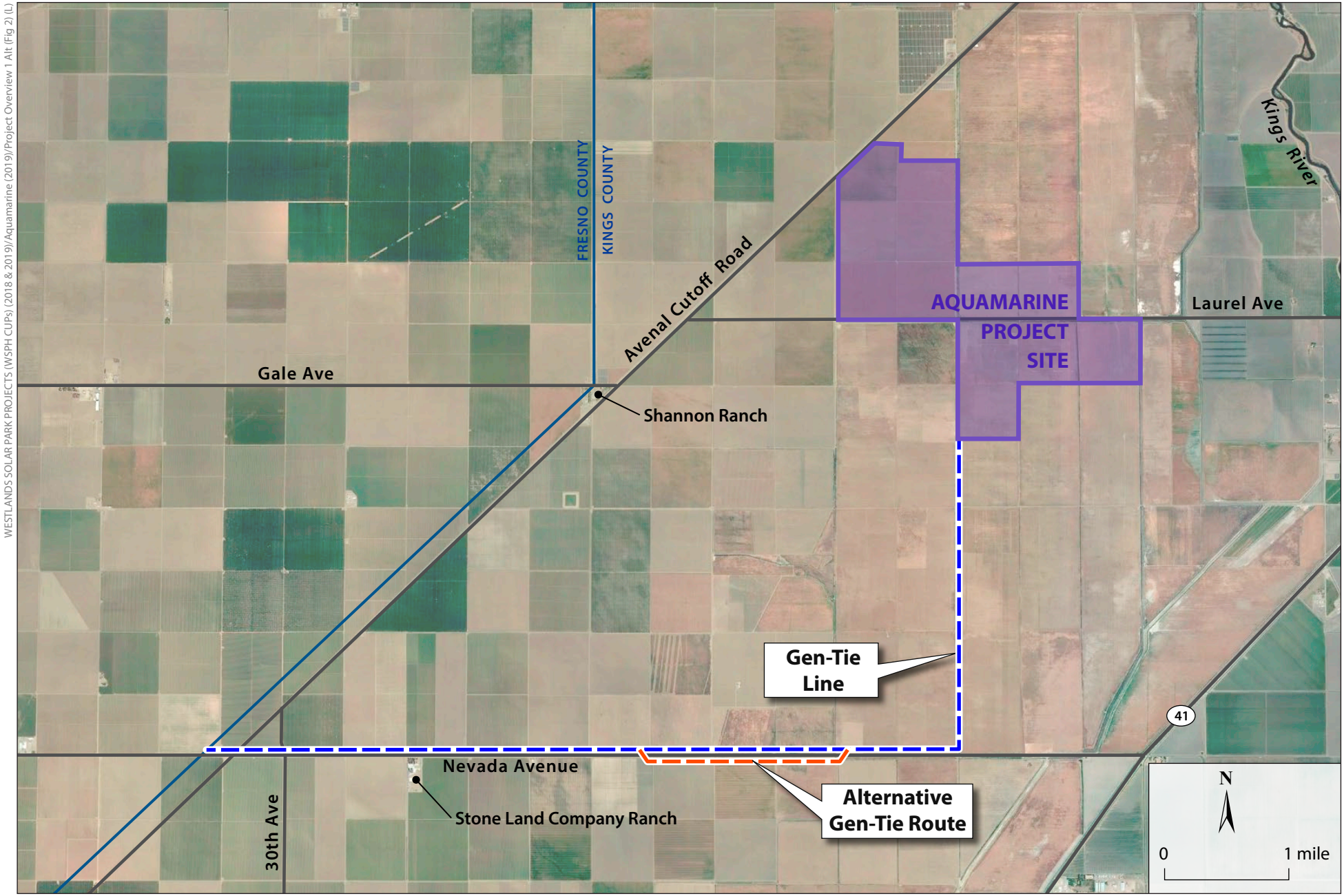
The existing Kings County Zoning on the entire project site is "AG-40 General Agricultural-40."



Source: Kings County Community Development Agency

Regional Location

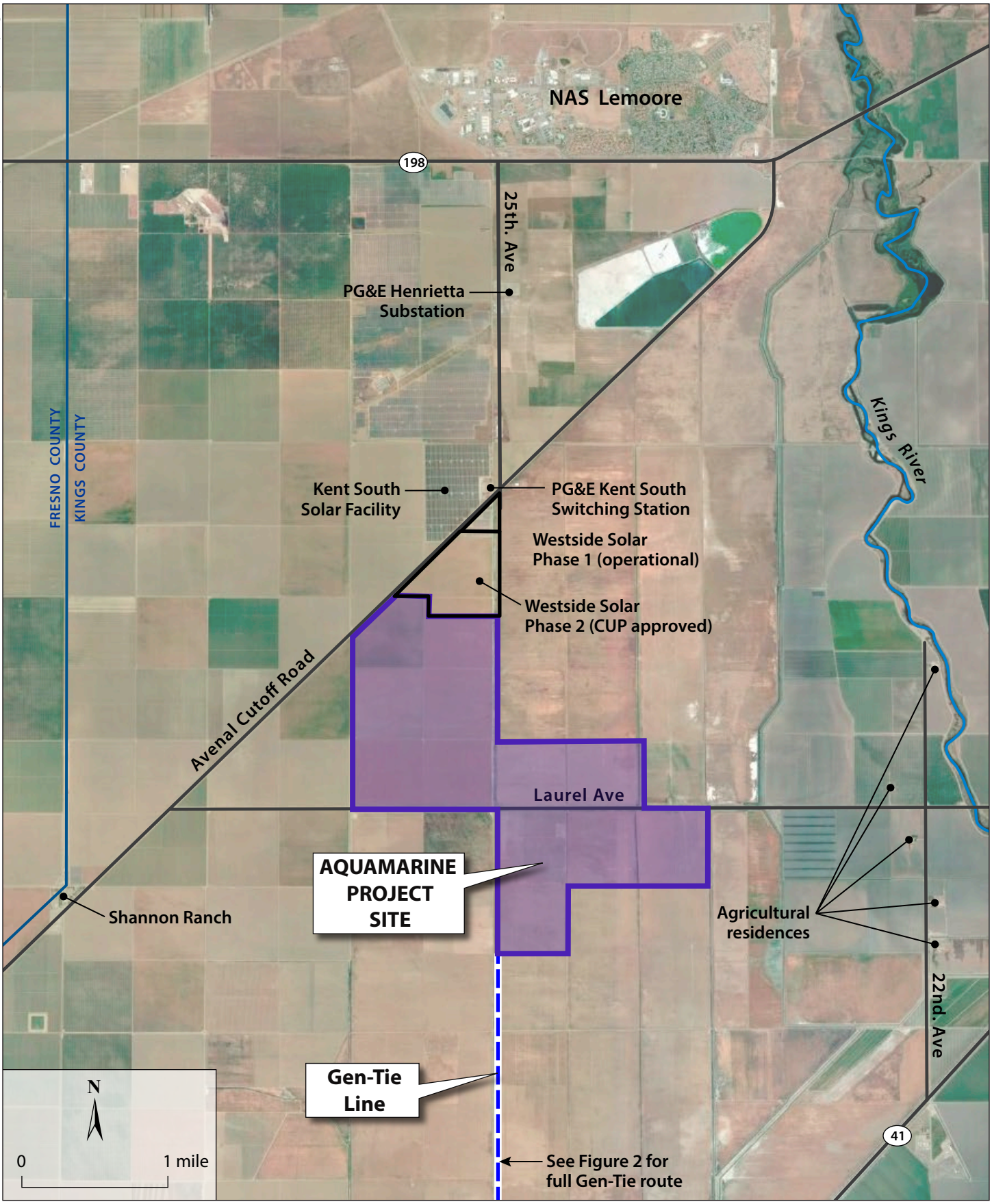
Figure 1



Source: Google Earth, 2018

Project Overview

Figure 2



Source: Google Earth, 2018

Project Vicinity

Figure 3

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2.2 PROJECT DESCRIPTION

INTRODUCTION AND OVERVIEW

Site Location and Description

The Aquamarine Solar Project will occupy an approximately 1,825-acre site generally located to the southeast of Avenal Cutoff Road, and centered on the junction of Laurel Avenue and the 25th Avenue alignment in Kings County. The project site includes the Assessor's Parcel Numbers that are listed in the following table:

Section 9	Section 15	Section 16		
026-010-057	026-260-04	026-290-08	026-290-42	026-290-72
026-010-058	026-260-09	026-290-10	026-290-46	026-290-73
026-010-059	026-260-34	026-290-12	026-290-50	026-290-74
026-010-040		026-290-26	026-290-51	026-290-75
		026-290-27	026-290-57	026-290-76
		026-290-32	026-290-59	026-290-77
Section 14	**Section 22**	026-290-33	026-290-63	026-290-78
026-260-37	026-260-28			026-290-79

Within Section 16, there are 12 additional small parcels dispersed throughout the section that are owned by other individual landowners and are not included in the Aquamarine Solar Project. These "out-parcels" range in size from 1.25 acres to 10 acres, and collectively occupy 26.25 acres in total. As shown in Figure 4c, the planned internal driveway system within this area provides vehicular access to all parcels that do not have direct access to Laurel Avenue or the farm road that follows the 25th Avenue alignment. None of the internal driveways will encroach upon these out-parcels, and no fencing is planned along the common boundaries of these out-parcels and the adjacent lands within the Aquamarine Solar Project site such that there would be no impediment to owners gaining access to these out-parcels.

The northwesterly 297 acres of the Aquamarine project site are under Williamson Act and the northeasterly 281 acres of the site are under Farmland Security Zone. The remaining 1,247 acres located south of these parcels are not under any Williamson Act Contracts.

The Aquamarine project site is virtually level with elevations ranging from a high of 228 feet above mean sea level (amsl) at the southwest corner of the site to a low of 206 feet amsl at the southeast corner. The improved County roads providing access to the site include Laurel Avenue which bisects the site from east to west, and Avenal Cutoff Road, which runs along the northwest edge of the site. Most of the site is currently used for the cultivation of winter wheat during the wet season and is typically left fallow during the dry season. There are two active agricultural wells on the site, including one near the west site boundary, approximately 0.7 miles south of Avenal Cutoff Road, and another at the eastern-most edge of the project site, just south of Laurel Avenue. The 70-kV Henrietta to Tulare Lake sub-transmission line runs through the middle of the site from north to south along the 25th Avenue alignment. Agricultural irrigation canals also run through the site alongside the 25th Avenue alignment, and along the south side of Laurel Avenue, and several smaller irrigation canals branch off to the south from the Laurel Avenue canal within the site. A large agricultural drainage ditch runs alongside the Avenal Cutoff Road frontage of the site. There are no buildings or sheds on the Aquamarine project site.

The Gen-Tie corridor commences from the southwest corner of the Aquamarine site and runs along the east side of the 25th Avenue alignment for a distance of 2.5 miles to Nevada Avenue. The Gen-Tie corridor then turns west and follows the north side of Nevada Avenue for a distance of 6.2 miles to the Fresno County line just west of Avenal Cutoff Road. The Gen-Tie Line will run entirely within easements acquired through private property alongside the County right-of-way except where it crosses public roadways. All of the lands within and adjacent to the Gen-Tie corridor are in agricultural use, and comprise fallow fields, row crops, tree crops, and vineyards.

Planned Solar Generating Facility

The Aquamarine Solar Project is planned to generate at total of 250 MW (AC) of electrical output from solar photovoltaic (PV) modules. The project is planned to be constructed over an 18- to 24-month period commencing in 2019. (See Figures 4 through 6.)

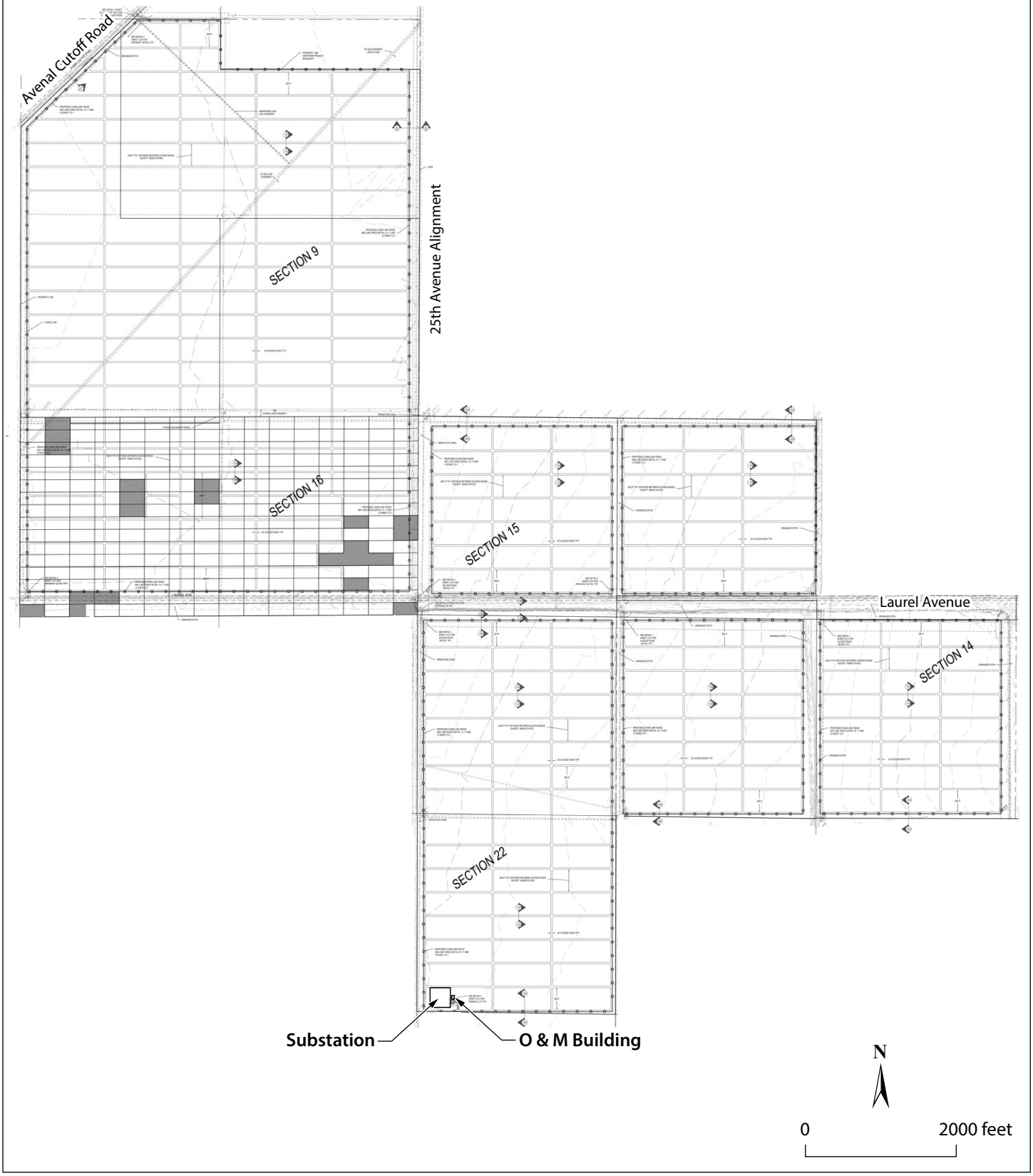
The solar modules will be mounted on a series of horizontal single-axis trackers which will be oriented north-south and rotate the solar arrays in an east-west direction. The solar modules produce direct current (DC) power and the electricity travels to power conversion stations (PCS) via underground cables to be converted to alternating current (AC) power. The project will include a total of 100 PCSs with power rating of 2.5 MW each, which will step up the generated power to a collection voltage of 34.5-kV.

The Aquamarine Solar Project will include a substation at the southwest corner of the project which will step up the generated power from 34.5-kV collection voltage to 230-kV for transmission.

Planned Gen-Tie Line

The power from the on-site substation will be conveyed to a new 230-kV generation tie-line (Gen-Tie Line) that will connect the Aquamarine project to the Point of Interconnection (POI) with the PG&E system at the Gates Substation. The Gen-Tie Line will be privately constructed, owned and operated. The Gen-Tie Line will commence from the southwest corner of the Aquamarine site and run along the east side of the 25th Avenue alignment for a distance of 2.5 miles to Nevada Avenue. The Gen-Tie Line will then turn west and follow the north side of Nevada Avenue for a distance of 6.2 miles to the Fresno County line just west of Avenal Cutoff Road. An additional 6.3 miles of gen-tie line will continue along Jayne Avenue in Fresno County to the Gates Substation. The Kings County portion of the Gen-Tie Line is included in the subject CUP application to Kings County. The Fresno County segment of the gen-tie line will be the subject of a separate Conditional Use Permit application to the County of Fresno. It is noted that the entire Gen-Tie corridor (in Kings and Fresno Counties) extending to the Gates Substation received programmatic CEQA clearance with WWD's certification of the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan Program EIR in January 2018.

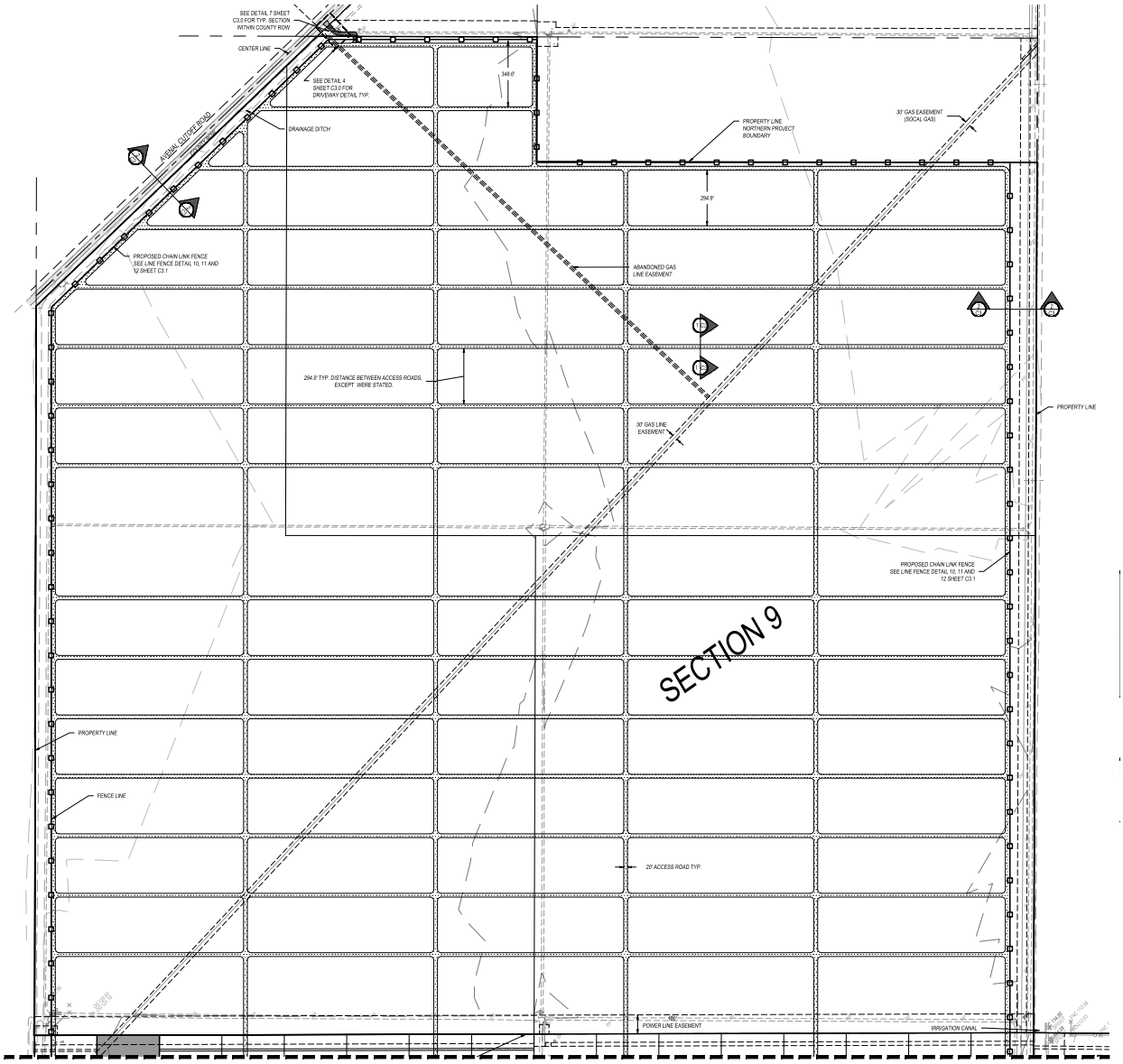
[Note: An alternative route for the Kings County segment of the Gen-Tie Line is also under consideration by the applicant. The 1.5-mile long alternative route would run along the south side of Nevada Avenue, commencing at the 26th Avenue alignment and would extend west to midway between the 27th and 28th Avenue alignments where it would cross over to the north side of the roadway (see Figure 2). Since conditions along the south side of Nevada Avenue in this segment are virtually identical to conditions on the north side of Nevada Avenue, the environmental analysis of the planned Gen-Tie Line alignment in this document is also applicable to the alternative alignment.]

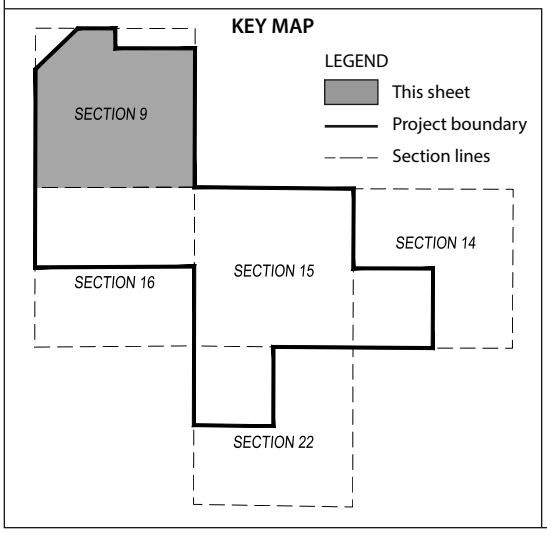


Sources: Stellavise; 4 Creeks Engineering

Overall Site Plan

Figure 4a





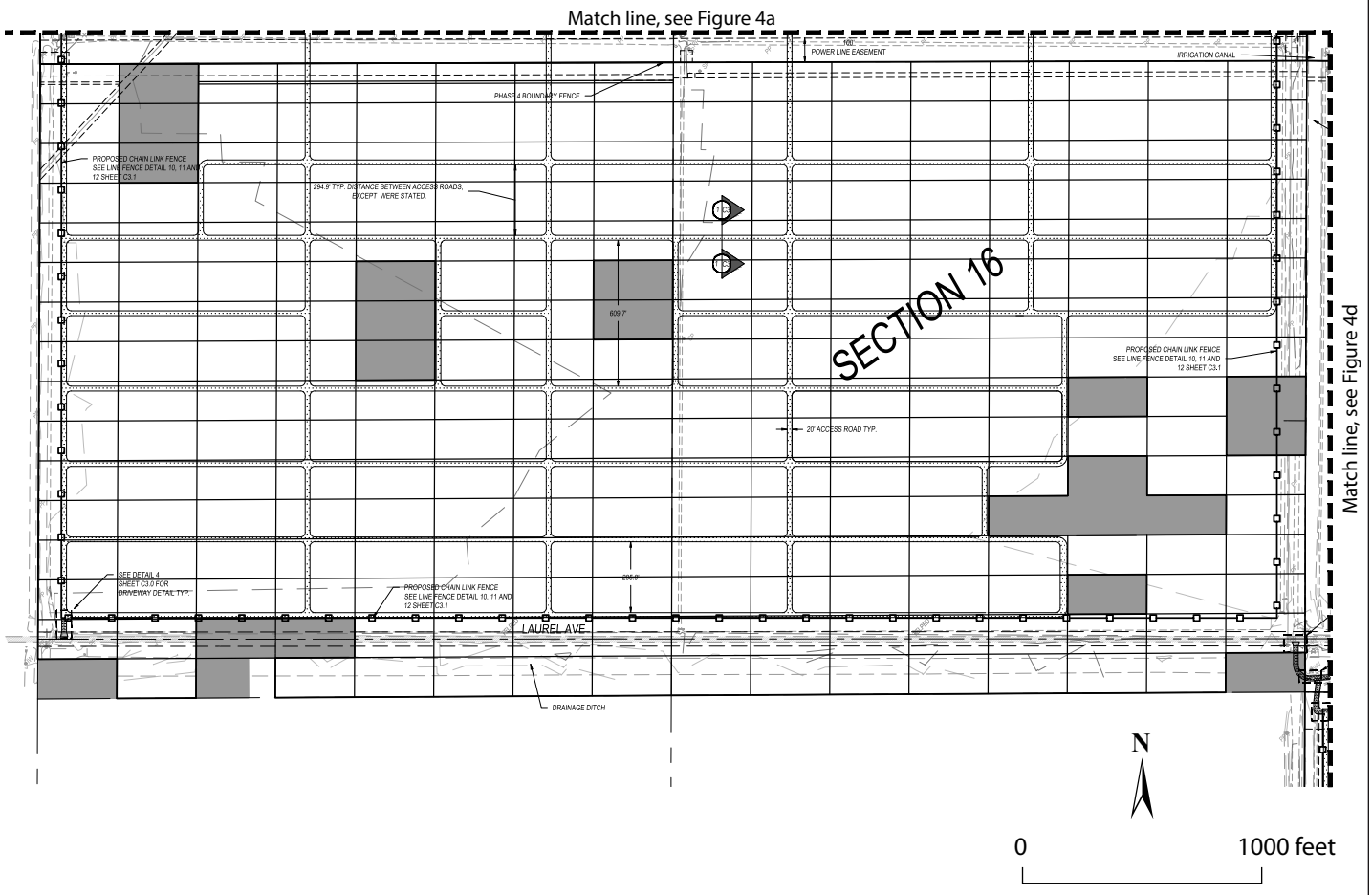
N

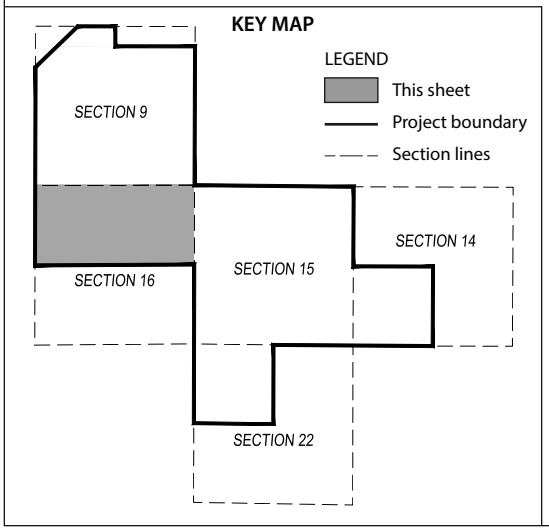
0 1000 feet

Sources: Stellavise; 4 Creeks Engineering

Site Plan - Northwest (1 of 4)

Figure 4b

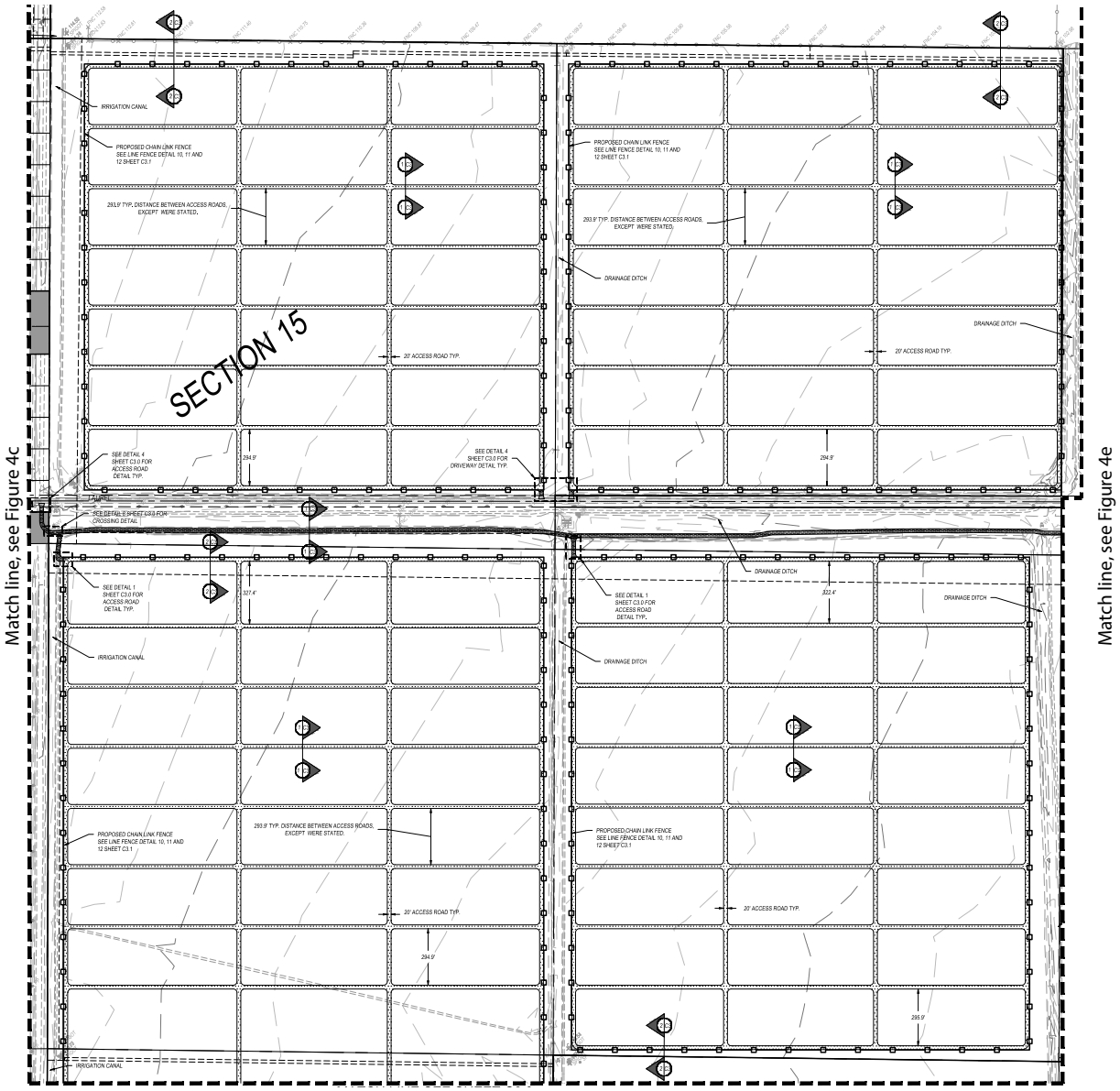


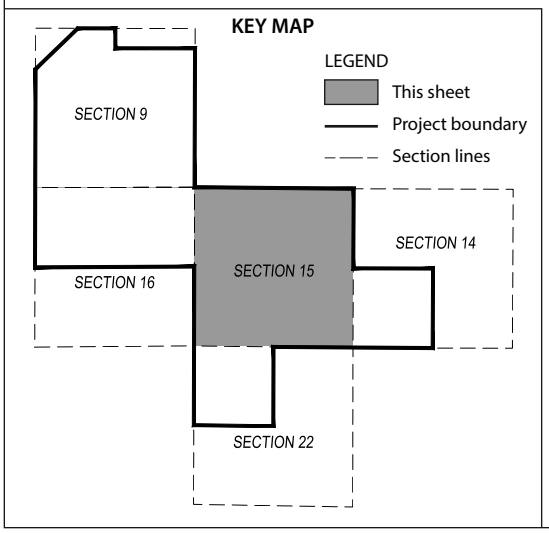


Sources: Stellavise; 4 Creeks Engineering

Site Plan - Southwest (2 of 4)

Figure 4c





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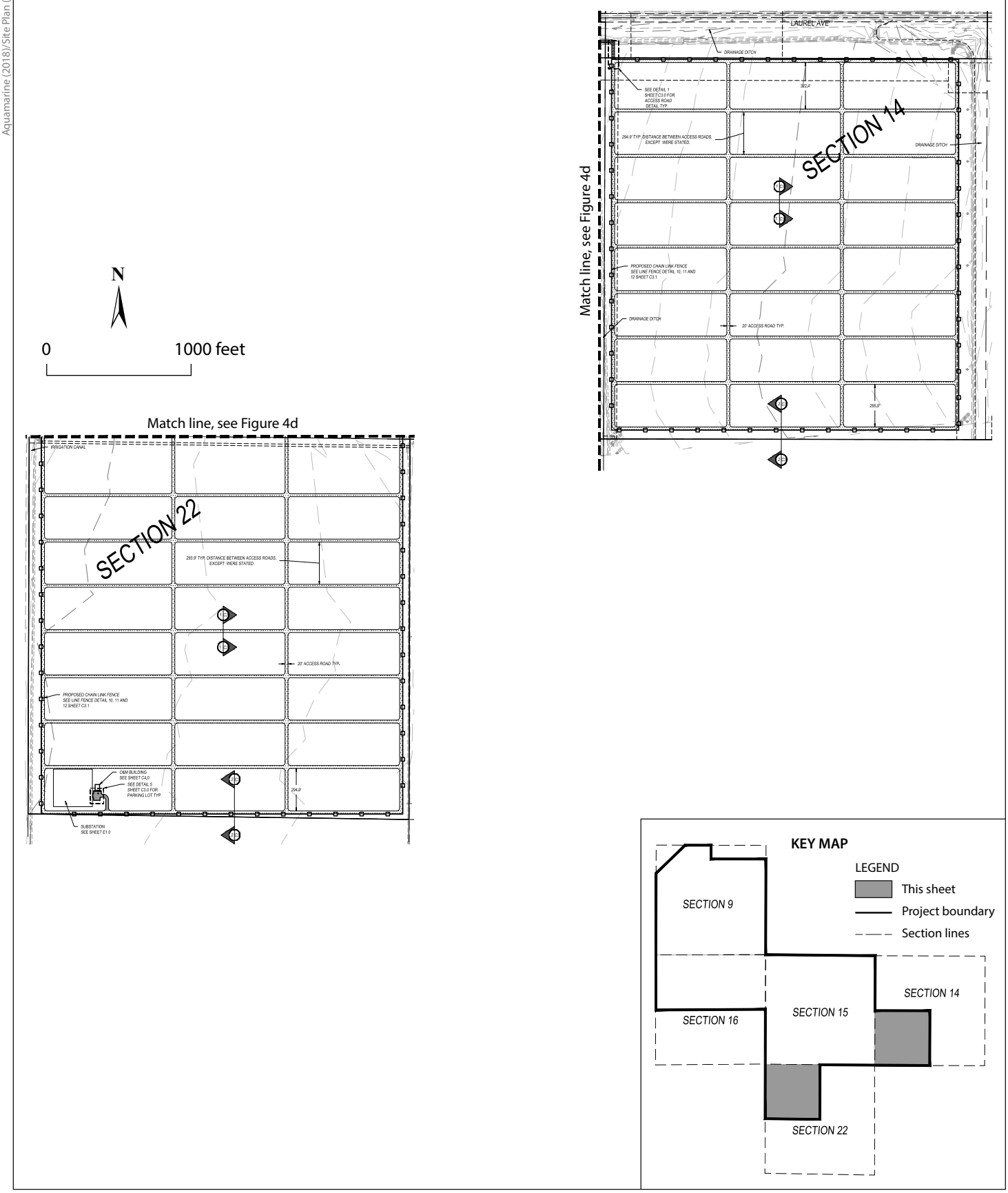
0 1000 feet

Sources: Stellavise; 4 Creeks Engineering

Site Plan - Central (3 of 4)

Figure 4d

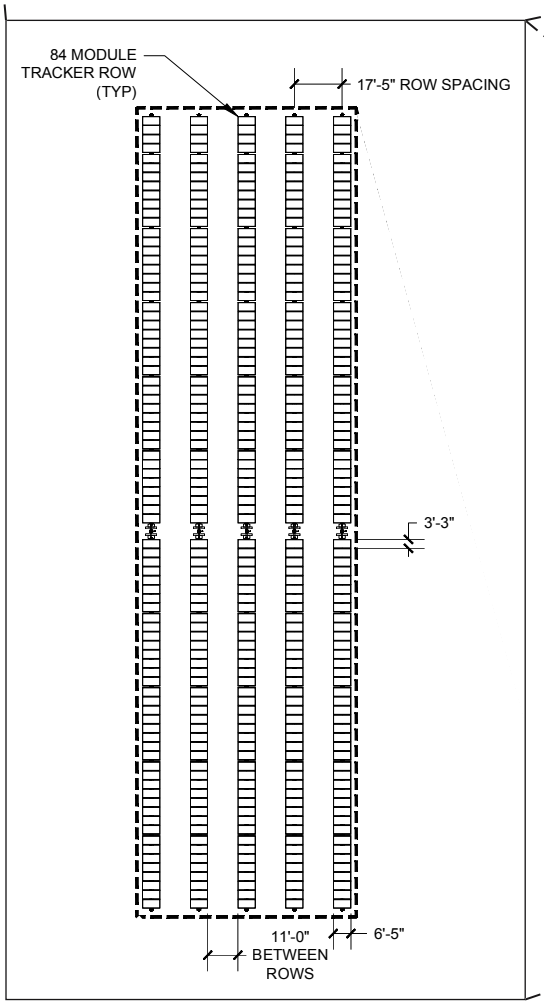


Sources: Stellavise; 4 Creeks Engineering

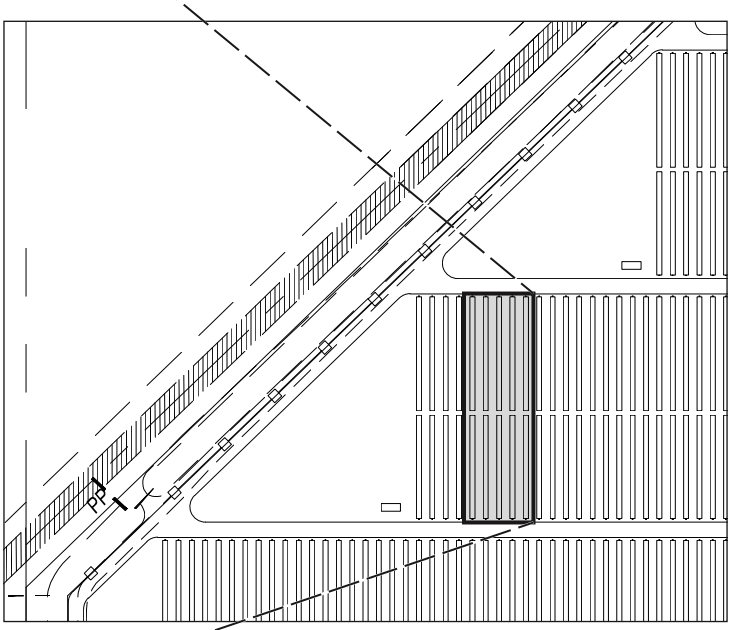
Site Plan - Southeast (4 of 4)

Figure 4e

Solar PV Modules on Horizontal Trackers



Solar Array

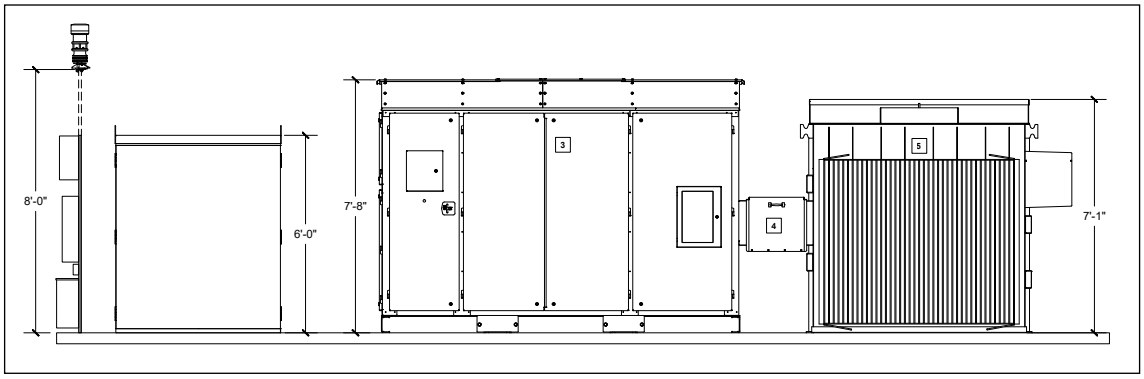


Plan Detail

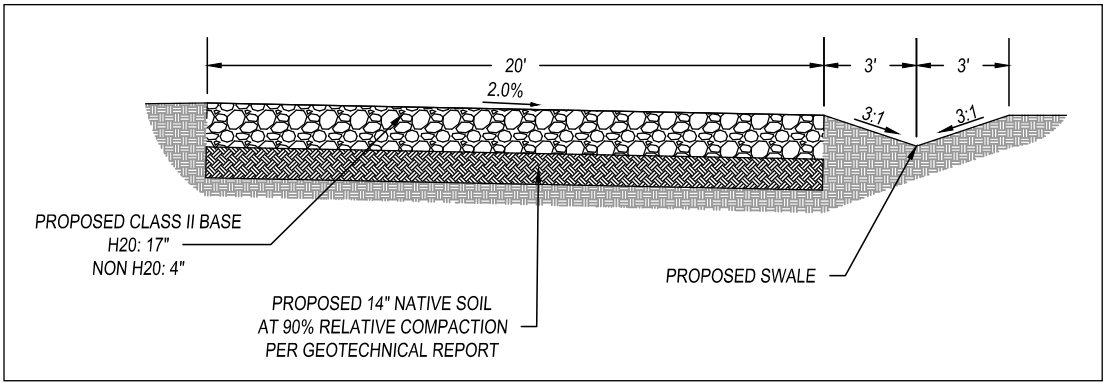
Source: Stellavise

Solar Array Details

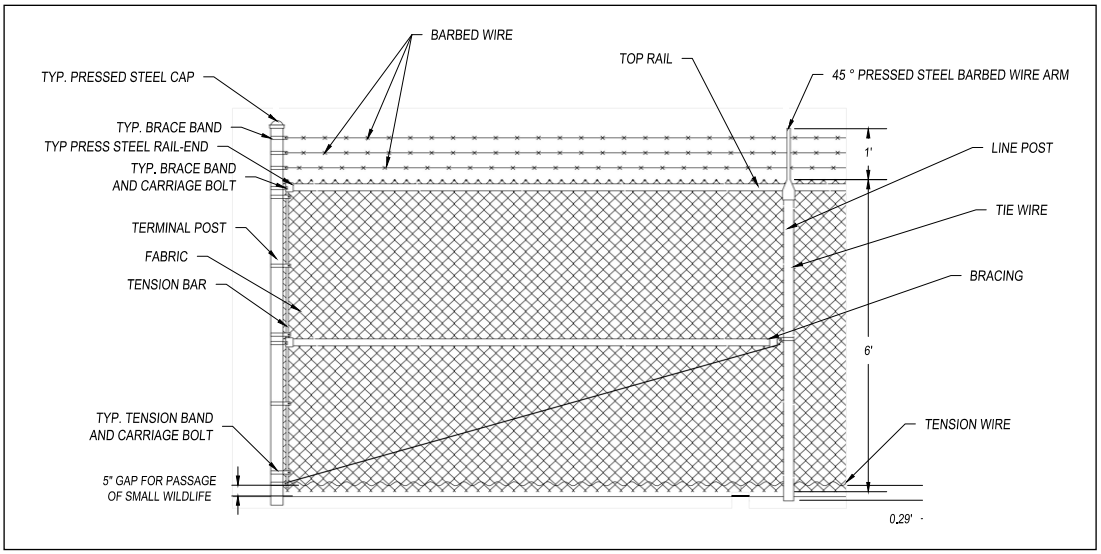
Figure 5



Inverter/Transformer Pad



Internal Gravel Maintenance Road



Perimeter Fence

Source: Stellavise; 4 Creeks Engineering

Solar Facility Details

Figure 6

Project Purpose and Objectives

The purpose and objectives of the Aquamarine Solar Project and Gen-Tie Line are as follows:

- Generate up to 250 megawatts of clean, renewable electrical power utilizing solar photovoltaic (PV) technology.
- Provide for the transmission of solar generation from the Aquamarine Solar Project to the State electrical grid by constructing a generation tie-line (Gen-Tie Line) from the Aquamarine Solar Project to the Gates Substation.
- Help implement the State's goal of increased electrical generation with renewable resources under California's Renewables Portfolio Standard (RPS).
- Help implement the State's Global Warming Solutions Act of 2006 (AB 32), as supplemented in 2016 by SB 32, by providing a non-fossil fuel based source of electricity that will replace existing fossil-based generation and thereby contribute to the overall reduction in greenhouse gas emissions.
- Provide for the economically viable and environmentally beneficial reuse of the site's physically impaired agricultural soils.
- Provide a utility-scale solar generation facility on highly disturbed lands which provide minimal habitat value for wildlife.
- Create new employment opportunities for local residents.
- Positively contribute to the local economy through stimulation of economic activity such as creation of secondary multiplier employment and the purchase of materials and services.

CONSTRUCTION OF SOLAR GENERATING FACILITY

The completion of the Aquamarine solar generating facility (SGF) will involve three major construction phases, including: site preparation activities, installation of solar arrays and electrical components, and construction of the on-site substation. Each of these construction phases is described in turn below.

Site Preparation Activities

Pre-construction Activities

The site development process will begin with pre-construction activities such as surveying and staking for various project elements like internal gravel driveways, PV array locations, electrical trenches, equipment pads, and support structures. The next step will be construction mobilization, which will include delivering initial equipment, supplies, and temporary construction trailers to the site.

Clearing and Grading

Prior to facility construction, the site will be cleared of vegetation, graded and compacted. Site clearing and soil preparation will occur incrementally as needed, and will not proceed to a new area until that

area is needed for the next construction phase. Vegetative cover will be retained as long as possible to minimize exposed soils and reduce potential for erosion and wind-blown dust.

Since the existing ground is generally level, with only agricultural furrows creating minor terrain roughness, the solar development can be accommodated without mass grading. Ground preparation will include tilling and grading to smooth out existing agricultural furrows, followed by compaction with rollers. The existing topsoil will not be removed. Final grades will be designed to provide for positive drainage. Measures for erosion and sediment control will also be implemented, as described in "Stormwater Management and Erosion Control" below.

Construction Staging

Each project phase will include a temporary staging area for construction support. The staging areas will occupy one or two acres each, and will include construction offices, a first aid station, worker parking, areas for equipment storage, cleaning, and maintenance, a truck unloading area, and an area for storing and assembling the PV systems prior to installation. Portable chemical toilets will provide for sanitary needs and bottled drinking water will be delivered to the site. The staging areas will require a power source for temporary lighting, which will either be supplied by portable generators or existing local power lines. The staging areas will be enclosed by security fencing. During construction, the staging areas will periodically be relocated within the project site, to maintain proximity to ongoing installation areas.

Temporary Internal Roadways

Construction access through the project site will be provided by temporary all-weather roadways composed of native compacted soil and treated with dust palliative as needed. Temporary project entrances will be composed of gravel, and tire wash racks will be installed at the project entries for washing wheels of construction vehicles prior to exiting in order to avoid tracking of mud and sediment onto Avenal Cutoff Road and Laurel Avenue.

Perimeter Fencing

Prior to installation of solar arrays, the perimeter of each project phase will be securely fenced and gated to prevent unauthorized access. The planned 6-foot chain-link galvanized metal perimeter fences for the Aquamarine site will be topped with standard three-strand barbed wire. Fence posts will be driven into the soil profile using truck mounted vibratory drivers. All fence posts will be capped to prevent the entrapment of small birds. Vehicle access gates will be installed at the project entrances on Avenal Cutoff Road and Laurel Avenue; these gates will remain locked when not in use.

In order to allow unimpeded passage of kit fox and other local wildlife through the Aquamarine site, all security fencing will include a continuous 5-inch gap between the bottom of the fence and the ground surface.

Installation of Solar Arrays and Electrical Components

Solar Arrays

The photovoltaic modules selected for the project will be composed of poly-crystalline silicon solar cells arranged on larger panels (measuring approximately 6.5 by 3.3 feet), and protected with tempered glass panes. The PV cells are dark in color to maximize absorption and minimize reflectance of sunlight.

Construction of the solar arrays will begin with installation of the cylindrical steel posts (or H-beams/C-channels) which will be driven into the ground using truck-mounted vibratory drivers. The posts will be installed at approximately 10 foot intervals to depths of 4 to 10 feet, with actual depths in depending on localized soil conditions and load factors. Next, the torque tubes and motor drivers for the single-axis trackers will be mounted on the installed posts in a north-south orientation. This will be followed by placement of metal racking systems on the trackers, and finally installation of solar modules on the racking systems.

The maximum planned length of the solar arrays will be 300 feet between internal 20-foot wide gravel driveways, although some arrays will be shorter to accommodate the irregular site boundaries. (The internal gravel driveways are described in detail on the next page.) The completed solar arrays will be spaced approximately 17.5 feet apart (on center) and 5.5 feet from the ground surface, when the modules are in their horizontal resting positions. At maximum tilt, the solar modules would reach a height of approximately 8 feet above ground level. The parallel arrays will be separated by approximately 11 feet of clear area when in the horizontal position.

Trenching will occur along each array to bury the electrical cables connecting the modules to the inverters and transformers distributed throughout the project site. The trenches will be approximately 3 feet wide and 3 feet deep and will be backfilled with native material after cables are laid. The electrical output from the PV modules will be collected as DC (direct current) in combiner boxes at each array and delivered via underground the cables to the Power Collection Stations (PCS).

Inverters and Transformers

The Power Collection Stations will include inverters and transformers to convert the generated power to collection voltage. The inverters will convert the DC electrical output to AC, and the transformers will step up the generated voltage to intermediate collection voltage (e.g., 34.5-kV). The PCSs will be placed on equipment pads at predetermined locations where each PCS will serve approximately 2.5 MW of AC power, or the output from approximately 111 full-sized arrays with a total of 9,343 modules in each array. Accordingly, the 250 MW Aquamarine project is planned to include 100 PCSs, each on a concrete pad measuring approximately 32- by 13-feet.

Operations Yards and Buildings

The Aquamarine Solar Project will include an operations yard which will provide storage for operational equipment and materials, and provide parking and maneuvering areas for staff vehicles, delivery trucks, and service vehicles. The operations yard will measure approximately 130 by 100 feet. The operations yard will include a pre-manufactured operations and maintenance (O&M) building for storage, occasional visits/meetings for maintenance crew and to house the on-site telecommunications server. The parking area will include 10 spaces including one ADA space. Domestic wastewater disposal would be provided by a septic tank and leachfield system located adjacent to the O&M building. Since the project site is located in an area for which the County requires septic systems to be engineered, the Aquamarine septic system will be designed and constructed as specified by a qualified registered civil engineer. During construction, wastewater needs would be provided by portable chemical toilets which would be serviced by a private contractor.

Project Entrances and Internal Gravel Driveways

The Aquamarine Solar Project will include permanent vehicular entrances off Avenal Cutoff Road and Laurel Avenue. The project entrances will be designed and constructed in accordance with the Kings County Improvement Standards.

Permanent access through the project will be provided primarily by internal gravel driveways which will run along the site perimeter of each project phase and across the solar fields in an east-west direction at intervals of 300 feet or less. Thus the distance between the internal parallel internal gravel driveways will provide sufficient access throughout the project for emergency vehicle access. The internal gravel roadways will be a minimum of 20 feet wide and will provide vertical clearance of at least 13.5 feet to allow passage and maneuvering of emergency and maintenance vehicles. The internal gravel driveways will be designed and constructed to have a continually durable dust free surface, in accordance with the Kings County Improvement Standards, and will be permeable to allow percolation of rainfall and runoff into the underlying soil. To meet Kings County Fire Department requirements, the internal driveways will consist of an all-weather surface capable of supporting fire apparatus with loads of 65,000 lbs.

Signage

Project signage will consist primarily of identification signs at the permanent project entrances, and safety signage at electrical equipment. During the construction phase, temporary directional signage will be employed as needed. All signage will conform to the sign standards of the Kings County Development Code.

Exterior Lighting

Lighting for the solar facilities will be designed to provide minimum illumination for safety and security while avoiding direct light spillover onto public roadways or adjacent properties. Permanent exterior lighting will be installed at the site entrances, the operations yard, and the substation. Lighting systems will be light-activated to automatically come on in the evening and shut off in the morning. Lighting within the solar fields will be confined the PCSs, which will be activated only when needed by switch or motion sensors. There will be no lighting within the solar arrays, along any internal access driveways, or around the facility perimeters. Light fixtures will be shielded and focused downward and toward the interior of the project site.

Telecommunications

The solar facility will include Supervisory Control and Data Acquisition (SCADA) systems to provide monitoring of facility operation and remote control of critical components. Within each project phase, the solar arrays will be connected by fiber optic or other cabling that will be installed in buried conduit leading to a centrally located SCADA system cabinet. The SCADA systems will be connected to local telecommunications service via overhead lines or buried lines. Telecommunications may also be transmitted wirelessly. The SCADA servers will either be housed in the on-site O&M buildings or remotely in a cloud system.

Meteorological Stations

The project will include one or more meteorological monitoring stations ("met" stations) to record key data such as insolation (incident solar radiation), air temperature, precipitation, wind direction and

speed, and relative humidity. The met stations will collect meteorological data from about 11 to 14 feet above the ground, or about 3 feet above the maximum height of nearby equipment to allow for accurate wind readings.

Installation of the Substation and Gen-Tie Line

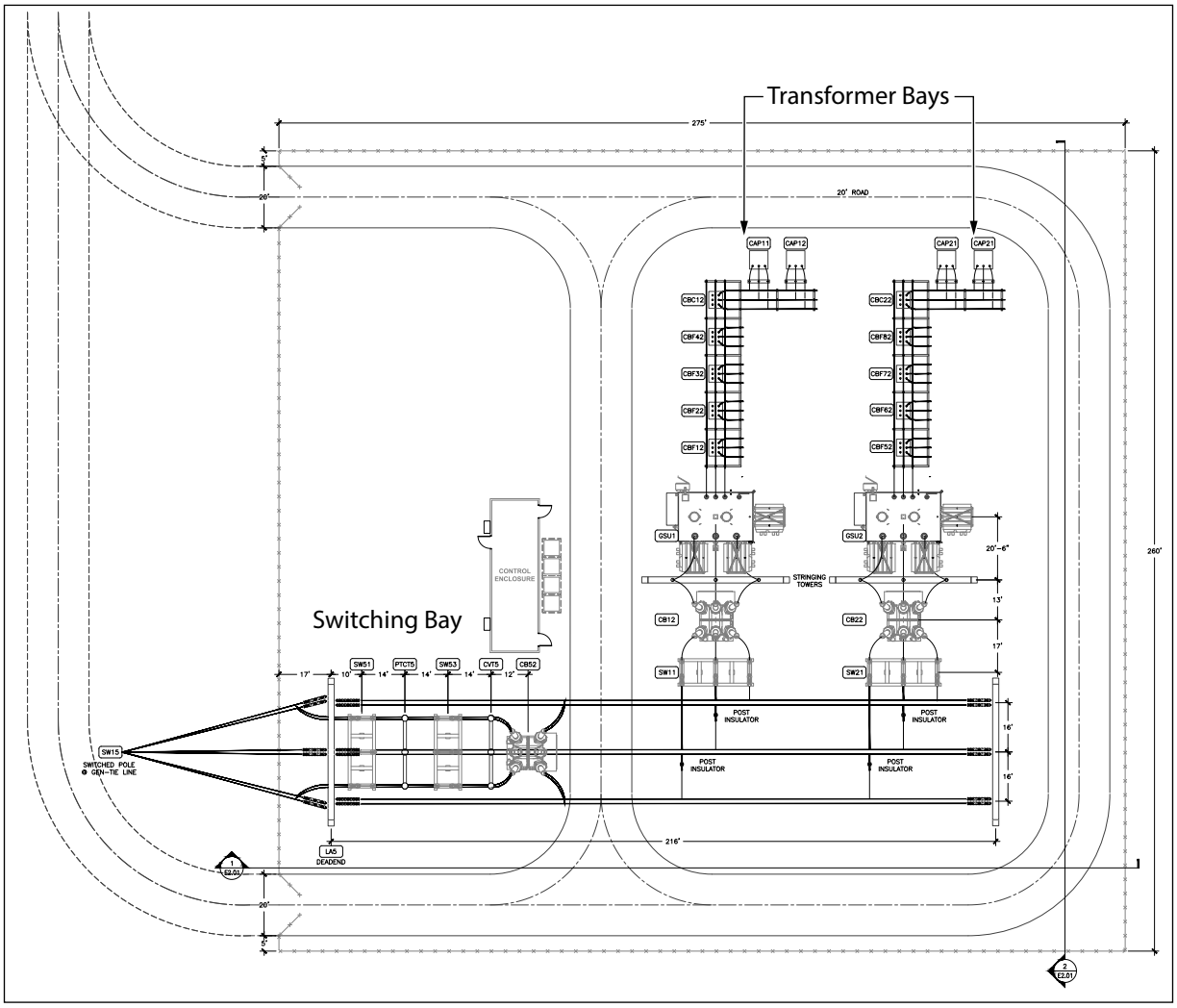
The project substation will be constructed by a private electrical contractor on an approximately 2-acre site in the southwest corner of the Aquamarine site (see Figure 7). At the substation, collection voltage will be stepped up from 34.5-kV to 230-kV and conveyed to the new 230-kV Gen-Tie Line that will connect the Aquamarine project to the Point of Interconnection (POI) with the PG&E system at the Gates Substation. The maximum height of structural elements within the on-site substation would be about 40 feet.

The new Gen-Tie Line will commence from the on-site substation and run southward along the east side of the 25th Avenue alignment within a 100-foot wide easement for a distance of 2.5 miles to Nevada Avenue. The gen-tie line will then turn west and follow Nevada Avenue in a 350-foot wide easement within private property for a distance of 6.2 miles to the Fresno County line just west of Avenal Cutoff Road. An additional 6.3 miles of gen-tie line will continue within private easements along Jayne Avenue in Fresno County to the Gates Substation. The terminations at the PG&E Gates Substation will be performed by PG&E subject to the approval authority of the California Public Utilities Commission (CPUC).

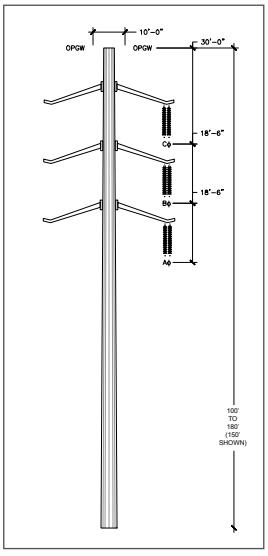
The Kings County portion of the Gen-Tie Line is included in the subject CUP application to Kings County. The Fresno County segment of the Gen-Tie Line is the subject of a separate Conditional Use Permit application to the County of Fresno, which is currently in process.

Interconnection Alternative

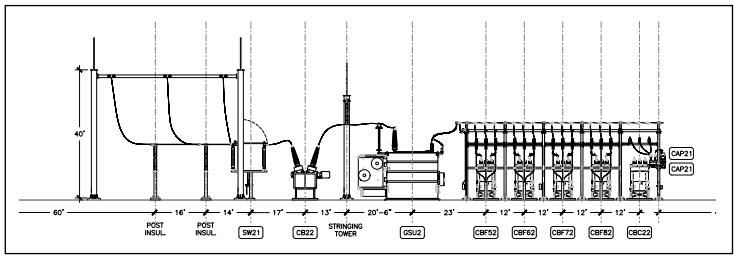
Another option under consideration for interconnection is to connect to the PG&E system at the on-site substation, which would also include a switching station. Under this option, the on-site substation/switching station would be under PG&E's ownership and thus subject to CPUC jurisdiction. CPUC General Order No. 131-D establishes that local jurisdictions are preempted from regulating electric power line projects, distribution lines, substations, or other electric facilities constructed by public utilities subject to the CPUC's jurisdiction.



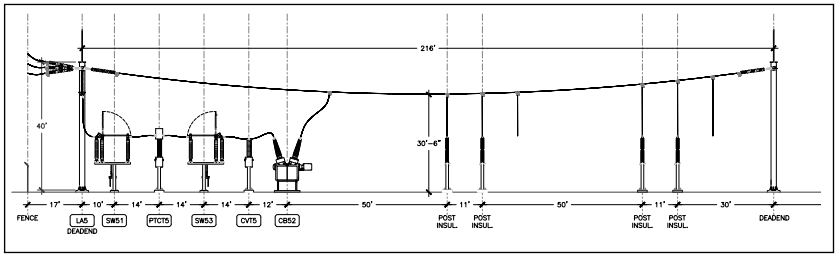
230-Kv Substation Plan



Gen-Tie Monopole (Typical)



Transformer Bay Elevation



Switching Bay Elevation

Source: CEI Engineering

Substation Plan

Figure 7

Impervious Surfaces

The coverage of the solar facility with impervious surfaces will be minimized in order to allow for revegetation of the site. Relatively small areas of impervious surfaces will be created by concrete pads and footings for the inverters/transformers, substation, the O&M building, and asphalt pavement for site entrances and parking area. The internal driveways will be surfaced with gravel for permeability, and will include no asphalt pavement or other impervious materials. Table 1 provides a breakdown of impervious surfaces by equipment and facility type.

TABLE 1

COVERAGE BY IMPERVIOUS SURFACES AND GRAVEL DRIVEWAYS AND PERCENTAGE REMAINING IN VEGETATIVE COVER

Equipment/Facility	Area of Coverage (Square Feet)
Impervious Surfaces	
Inverter/Transformer Pads	41,600
Substation Pad/Footings	2,866
O&M Building	1,240
Operations Parking Area (paved area)	342
Total Impervious Surface Coverage	46,048
Total Coverage by Gravel Driveways (Pervious)	6,144,208
Total Site Area (1,824.65 acres)	79,481,754
Percentage Impervious in Project	**0.06%**
Percentage Gravel Driveways	7.73%
Percentage Impervious + Gravel Driveways	7.79%
Percentage Remaining in Managed Vegetative Cover* (= Total Area minus Impervious Surfaces and Gravel Driveways)	73,291,498 square feet **92.21%**
Percentage Remaining in Grazed Vegetated Cover* (= 872 acres west of 25th Ave., minus Impervious Surfaces and Gravel Driveways, = 804 acres). (This is a subset of Managed Vegetative Cover above.)	35,022,240 square feet **44.06%**

* See "Vegetation and Agricultural Management" below for a detailed explanation of post-construction vegetation management and grazing requirements.

Construction Workforce and Equipment

Workforce

During construction, the number of workers would fluctuate depending on the construction stage. As shown in Table 2, the workforce numbers would be greatest during installation of the solar arrays, especially when this construction stage overlaps with the site preparation stage, when a total workforce of 430 construction personnel would be on-site.

TABLE 2

OFF-SITE CONSTRUCTION VEHICLE USAGE, BY CONSTRUCTION PHASE

Vehicles	**Estimated Usage**		
Phase 1 – Site Preparation *(210 work days or 43 weeks)*	**Units**	**Miles/Round Trip**	**Round Trips/Unit**
Water Trucks[1]	5	85	1
Flat Bed Trucks	12	85	4
Gravel Trucks (End Dump)(Delivery)	18	56	210
Equipment Transport Trucks (Delivery)	24	85	30
Worker Vehicles[2]	140	68	210
Phase 2 – Installation of Solar Arrays *(300 work days or 61 weeks)(Overlaps with Phase 1 for 65 work days or 13 weeks)*	**Units**	**Miles/Round Trip**	**Round Trips/Unit**
Water Trucks[1]	4	85	1
Freight Trucks (Delivery)[3]	19	400	275
Equipment Transport Trucks (Delivery)	7	85	10
Service Trucks	3	85	275
Worker Vehicles[2]	290	68	300
Phase 3 – Installation of Inverters, Transformers, Substation *(160 work days or 30 weeks)(Overlaps with Phase 2 for 85 work days or 17 weeks)*	**Units**	**Miles/Round Trip**	**Round Trips/Unit**
Water Trucks[1]	1	85	1
Ready Mix (Delivery)	3	50	250
Freight (Delivery)[3]	1	400	150
Equipment Transport Trucks (Delivery)	1	85	18
Worker Vehicles[2]	40	68	160

[1] Water trucks are anticipated to be filled with water from the existing agricultural well at the west boundary of the project site. .

[2] No carpooling or transit use is assumed for workers' traveling to and from the Aquamarine project site.

[3] Freight deliveries include solar modules, racking systems, support structures, and major electrical components, all of which are assumed to originate in equal portions from ports or distribution centers in the Bay Area or Southern California.

Typically, construction would take place between the hours of 7 AM to 3 PM, Monday through Friday, although work could take place outside these hours if needed to maintain schedules. For safety reasons, certain construction tasks, such as final electrical terminations, must be performed after dark when no energy is being produced.

Assuming all workers commute to the site in single-occupant vehicles, they will generate an average of 860 daily trips (in-bound and out-bound) or 430 round trips during the peak 13 week construction period when Phases 1 and 2 overlap. Employee traffic generated during less intensive construction periods will be substantially less.

The construction workforce for the Aquamarine Solar Project will be largely drawn from the surrounding communities, with the possible exception of project management personnel. Based on a gravity model using population and distance factors for communities within commuting range, it was determined that the average round-trip commute length for construction personnel would be 68 miles. All workers will be encouraged to carpool.

Construction Deliveries

The construction of the solar facility will involve the use of numerous pieces of construction equipment and support vehicles at various stages of construction. This will include grading and excavation equipment such as graders, scrapers, dozers, compactors, trenchers, and back-hoes; and general construction equipment like concrete mixers, cranes, hydraulic pile drivers, fork lifts, water trucks, ATVs, pick-up trucks, and generators. This equipment will be brought to the Aquamarine site when needed and will remain within the site throughout the duration of the activities for which they are needed.

Deliveries of solar modules and support structures, electrical components, concrete and aggregate will occur throughout the construction period. The equipment and material deliveries will originate in various locations in central California and will follow designated truck routes to travel to the project site. It is anticipated that deliveries of solar modules, tracking systems, and major electrical components would originate from ports or distribution centers in the Bay Area and/or Southern California. It is anticipated that aggregate supplies would be obtained from the nearest source at Avenal Paving and Gravel located on Highway 33 between Avenal and Coalinga. Similarly, it is expected that concrete would be supplied from a ready-mix plant located outside Coalinga. All other construction deliveries are expected to originate from the Fresno area.

The estimated number of deliveries during all construction stages is shown in Table 2. For the most intensive construction period – a 13-week period when Phases 1 and 2 overlap - the project will receive an average of 42 deliveries per day.

Table 3, on the next page, lists the types of equipment that will be utilized during the three main construction stages for the project.

TABLE 3

ON-SITE CONSTRUCTION EQUIPMENT USAGE, BY CONSTRUCTION PHASE

Equipment	Estimated Usage		
Phase 1 – Site Preparation *(210 work days or 43 weeks)*	**Units**	**Hours/Day (5 days/week)**	**Days/Unit**
Water Trucks	5	7	210
Bulldozers	3	7	210
Graders	5	7	108
Compactors	1	7	42
Skid Loaders	1	7	188
Asphalt Pavers	1	4	28
Front-End Loaders	1	7	83
Phase 2 – Installation of Solar Arrays *(300 work days or 61 weeks)(Overlaps with Phase 1 for 65 work days or 13 weeks)*	**Units**	**Hours/Day (5 days/wk)**	**Days/Unit**
Water Trucks	1	7	154
Tractors – post drivers	2	7	245
Forklifts	6	7	220
Trenchers	9	4	245
Flat Bed Trucks	12	7	220
Phase 3 – Installation of Inverters, Transformers, Substation, Interconnection *(160 work days or 30 weeks)(Overlaps with Phase 2 for 85 work days or 17 weeks)*	**Units**	**Hours/Day (5 days/wk)**	**Days/Unit**
Water Trucks	1	7	140
Forklifts	2	4	140
Trenchers	1	4	144
Backhoes	1	4	158
Cranes	1	2	94
Aerial Lifts	1	6	94

Site Management during Construction

Dust Suppression and Soil Conditioning

During construction, non-potable water will be used for dust control and soil conditioning during earthwork. Based on past experience with similar projects, the water demand for preparation and construction of the 1,825-acre Aquamarine solar project would average 0.2 acre-feet per acre (af/ac), resulting in a total consumption of 365 acre-feet of water during the two-year construction period, or 182.5 acre-feet per year (afy). It is anticipated that water for grading and construction will be obtained from the existing agricultural well at the west boundary of the project site.

Curtailment of groundwater pumping to meet the project demand for construction water is not currently foreseen. However, in the unlikely event that such unforeseen curtailment occurs, the relatively small volumes of untreated water that would be temporarily required during construction would be purchased from alternative sources and trucked to the site.

Stormwater Management and Erosion Control

During grading and construction, soil stabilization and runoff control measures would be required to prevent erosion and sedimentation. The particular measures that would be appropriate for conditions within the Aquamarine site would be specified in the Storm Water Pollution Prevention Plan (SWPPP), as required for all projects over 1 acre in size by the State Water Resources Control Board. The SWPPP would specify Best Management Practices (BMPs) such as stormwater runoff control and hazardous waste management measures, and include monitoring and reporting procedures.

Typical measures will include: diversion of runoff away from disturbed areas, protective measures for sensitive areas, mulching for soil stabilization, straw-bale barriers, and siltation or sediment ponds. Specific BMPs will be determined during the final engineering design stage for each project phase. Approval of each respective project SWPPP by the Regional Water Quality Control Board will be obtained prior to initiation of ground disturbing activities for each project phase.

Construction Waste Recycling and Disposal

The waste generated during construction will primarily consist of non-hazardous waste materials such as packing containers and materials, waste lumber, wood pallets, scrap metal, glass and paper. These waste materials will be segregated on-site for recycling or disposal at a Class III landfill.

Some quantities of hazardous wastes will be generated during construction. These waste materials will include waste paint, waste solvents, waste oil, oily rags, used batteries, etc. Hazardous wastes generated during construction will be either recycled or disposed of at a Class I disposal facility, as required.

Revegetation of Completed SGF Areas

Upon completion of each section of the solar facility, the exposed soils beneath and around the solar arrays will be vegetated to prevent erosion and provide dust control. The exposed areas will be planted with an approved native seed mix that will contain only “low water use” plant species, thus minimizing water use, discouraging weed infestation, and providing habitat value for native wildlife species.

OPERATION OF SOLAR GENERATING FACILITY

The Aquamarine Solar Project will involve facility operation and monitoring, facility maintenance, and security. These are described in turn below.

Facility Operation and Monitoring

Operational activities will primarily involve monitoring and management of solar generation, which will occur during daylight hours year round. The project proponent will contract with an off-site O&M provider with a facility in the area. Operations staff will not be stationed at the Aquamarine site, but will manage the facility remotely via SCADA ("Supervisory Control and Data Acquisition") systems. Operators will monitor and analyze the collected data to determine maintenance needs, respond to automated alerts from the monitoring systems (i.e., in the event of equipment failures or abnormalities), and communicate with customers and transmission facility operators.

Facility Maintenance

Equipment and Infrastructure Maintenance

Operators will also visit the Aquamarine solar facility regularly to conduct visual inspections of equipment, internal roadways, and fencing, and perform maintenance or make repairs as necessary. Table 4 provides details on equipment and vehicle usage for operations and maintenance purposes. It is expected that two maintenance personnel would visit the site periodically, with more workers added when repairs or installation of replacement equipment is needed. (See 'Operations Personnel' below for an overview of staffing levels and functions.)

TABLE 4

EQUIPMENT AND VEHICLE USAGE DURING SOLAR FACILITY OPERATIONS AND MAINTENANCE

	Estimated Usage (Annual)		
Equipment	**Units**	**Hours/Day/Unit**	**Total Days/Unit/Year**
All-Terrain Vehicle (ATV)	2	4	5
Tractor	2	8	100
Portable Generator	2	8	60
Portable Water Trailer w/Pump	5	8	80
Vehicles	**Units**	**Daily Miles/ Unit**	**Total Days/ Unit/Year**
Pickup Truck (Routine O&M)	8	30	130
Pickup Truck (Panel Washing)	10	6	40

As mentioned, the operations yard will include a pre-manufactured O&M building for storage, occasional visits/meetings for maintenance crew and to house the on-site telecommunications server. The sanitary facilities in the O&M building will be connected to an adjacent septic tank and leachfield system which will be designed and constructed as prescribed by a qualified registered civil engineer.

Weed and Pest Control

As required under the County Development Code, the Aquamarine project will include implementation of a Pest Management and Weed Abatement Plan. The Pest Management Plan will be directed toward prevention and control of infestations by rodents such as rats, ground squirrels, gophers, and voles which can cause damage to project structures and spread diseases. The primary objective will be to avoid rodent infestations through preventative measures such as vegetation management (described below) in order to avoid impacts to protected wildlife species. Natural or ecological control through predation by hawks would also provide incidental control of rodent populations. The use of eradication measures such as application of rodenticides would only be employed as a last resort.

The Weed Control Plan will specify measures to prevent infestation of invasive weed species which would reduce the grazing value of the site, pose a fire hazard, and potentially spread to neighboring farmland. Weed control will mainly consist of a combination of methods, including the use of weed-free seed mixes for site revegetation, and keeping vegetation low through sheep grazing and mechanical methods such as mowing, trimming, and hoeing. Herbicides would be used only selectively where needed using low impact chemicals and practices that minimize impacts to protected biological species. The Pest Management and Weed Abatement Plan will be submitted for County approval prior to issuance of building permits for the Aquamarine Solar Project.

Vegetation and Agricultural Management

Upon the completion of construction within a given area of the project, the exposed soils will be revegetated through seeding for slow-growing grasses, with the site entire revegetated upon completion of construction. Vegetative cover will generally be kept low to prevent shading of solar panels and to minimize buildup of combustible fuel loads. The short vegetation cover will also allow passage of emergency vehicles, and maintenance and panel washing vehicles. Management of the site vegetation in the portion of the site west of the 25th Avenue alignment will be different from vegetation management in the area east of the 25th Avenue alignment, as described below.

In the western portion of the project site vegetation will be kept low primarily through sheep grazing and also mechanical means where needed. The sheep grazing would take place in the westerly 872-acres of the project site in order to maintain agricultural activity on these lands which are subject to Williamson Act contracts. (The net vegetated area subject to grazing would be 804 acres after subtracting internal driveways, equipment pads, O&M building and paved parking area.) The sheep grazing will be managed and controlled by temporary sheep enclosures which will be moved progressively through the western portion of the project site. Grazing will occur from January until the end of the growing season in May, at which time the sheep will be removed. The details of the sheep grazing program will be further described in the Agriculture Management Plan (AMP) which will be prepared and implemented to ensure maintenance of sustainable agricultural operations in the western portion of the site throughout the life of the project. The detailed requirements of the AMP are specified in Mitigation Measure AG-1 in this IS/MND (see section *4.2 – Agriculture and Forestry Resources*). The AMP would be subject to County approval prior to issuance of building permits for the Aquamarine Solar Project. (See section 4.2 *Agriculture and Forestry Resources* for detail discussion of agricultural management requirements for the project.)

In the eastern portions of the project site, vegetation will be primarily managed by mechanical means such as mowing and hand-clipping. Sheep grazing may be employed in these areas although it is not required to maintain agricultural productivity since these areas of the site are not subject to Williamson

Act contracts. However, revegetation of the entire site is required to prevent dust generation from exposed soils, per Air District requirements, and to prevent erosion, as specified in Mitigation Measure HYD-1, and also to conserve soils for future reclamation, as specified in the Soil Reclamation Plan, required under Mitigation Measure AG-2.

Fire Safety

The project will include a number of design and operational measures for fire prevention and suppression. Design measures include incorporation of County design standards for minimum driveway widths, ground clearance, and accessibility to all areas of the project. Fire prevention measures will include vegetation management as described above to minimize the potential for grass fires. All electrical equipment (including inverters) not located within a larger structure will be designed specifically for outdoor installation, and all electrical equipment will be subject to product safety standards. Vehicles and equipment will be required to be parked or stored away from vegetated areas. All construction and operations personnel will be trained in fire prevention and suppression measures, including the safe shut-down of electrical equipment during emergency incidents. Portable carbon dioxide (CO2) fire extinguishers will be mounted at the inverter/transformer pads throughout the project. Smoking will be permitted only in designated areas.

Prior to commencement of site work on the project, the fire prevention and emergency action plans to be implemented during project construction and operation would be prepared and formalized in coordination with the Kings County Fire Department.

Solar Module Cleaning

The PV modules will be washed periodically to remove dust in order to maintain efficient conversion of sunlight to electrical power. The cleaning interval will be determined by the rate at which electrical output degrades between cleanings. Periodic panel washing will likely be most needed during the dry summer months when there is an increased potential for deposition of windblown dust from nearby agricultural operations. It is anticipated that panel washing will be required up to four times per year, and will be accomplished using light utility vehicles with tow-behind water trailers. No chemical cleaners will be used for module washing. It is estimated that water demands from one complete cycle of panel washing will be approximately 2,437,439 gallons for the 250 MW project. (This estimate is based on: a water usage rate of 1/8 gallon per square foot of module area; a total of 934,332 modules; 20.87 square feet per module.) Four panel cleaning cycles per year will use approximately 9,749,755 gallons, or 29.92 acre feet of water.

Overall Operational Water Demands

General operational activities, such as washing or rinsing equipment, hand washing, and other non-toilet uses, is estimated to require of approximately 500,000 gallons (1.53 acre feet) of non-potable water annually. This is based on a conservative (high end) consumption rate of 2,000 gallons per MW per year.)

In addition, the sheep used for grazing will each require up to 3 gallons of water per day. Assuming a sheep grazing density of 0.5 sheep per acre over approximately 804 acres to be grazed, a total of 402 sheep would be employed. During the course of a 5-month (151-day) grazing period (January through May), the total water requirement for sheep watering would be 182,106gallons, or 0.56 acre-feet per year.

As discussed above, the washing of solar modules will use approximately 29.92 acre-feet of water annually, based on four washing cycles per year.

Based on the annual water consumption estimates provided above, the combined operational water use by the Aquamarine solar facility for panel washing (29.92 afy), sheep watering (0.56 afy), and general operational uses (1.53 afy) will total approximately 32.01 acre-feet of water annually over the approximately 1,825-acre project site. This is equivalent to 0.0175 acre-feet per acre or 2.81 acre-feet per quarter-section (160 acres).

Operational water supplies will be provided by Westlands Water District (WWD) through its existing system of lateral pipelines for conveyance of imported surface water. The WWD has established an annual allocation of water deliveries for PV solar projects within its service area. PV solar facilities are eligible to receive up to 5.0 acre-feet per quarter-section per year for operational uses. As noted above, the operational water usage rate at the Aquamarine facility is estimated to be 2.81 acre-feet per quarter-section per year, which is well within the WWD's maximum annual allowance of 5.0 acre-feet per quarter-section.

Small quantities of potable water will be required at the solar facilities for drinking and other uses. Potable water will be delivered to each site by a water delivery service.

Operations Personnel

Facility operations would be conducted by remote monitoring of the solar operation and by on-site maintenance services as needed. It is estimated that the operation of the solar facility will require no more than 10 on-site workers at any given time, as follows. Up to 2 workers will visit the solar facilities periodically to perform inspections, maintenance, and repair work, with additional staff added as needed for major equipment repairs or replacement. Panel washing cycles will involve up to 6 workers for up to 6 weeks per wash cycle, which is expected to occur up to 4 times per year. During the growing season when sheep are grazing on site, up to 2 sheep herders would be required to manage the rotation of sheep flocks through the site.

Security

The perimeter of the solar facility will be securely fenced and gated to prevent unauthorized access, as described under "Perimeter Fencing" above. The facility operator will contract with a private security company to provide security services during construction and operation. Electronic surveillance equipment such as infrared security cameras and motion detectors will be installed around the solar facility, with video feeds transmitted in real time to the off-site security contractor for monitoring. In the event that the surveillance system detects a breach, a security representative will be dispatched to the site, as needed, and the County Sheriff's office will be notified as appropriate.

DECOMMISSIONING AND SITE RECLAMATION

At the end of its useful life, the Aquamarine solar facility will be decommissioned and the land returned to a farmable state. (It is anticipated that the initial purchase contract for solar generation will have a term of 25 years, although the term could be extended by several years through amendments to the purchase agreement.) Once the solar facility is de-energized, the facility will be decommissioned and the site will be reclaimed in accordance with the Soil Reclamation Plan required by the County. The Soil Reclamation Plan will be subject to County approval prior to issuance of a building permit.

Under the Soil Reclamation Plan, the deconstruction process will involve removal of all solar arrays, equipment and pads, substations, electrical cables, fencing, and other material. Equipment and materials will be reused and/or recycled to the extent practicable. Since these decommissioning activities will involve exposure and disturbance of soils, measures for erosion and sediment control will be implemented in accordance with a Storm Water Pollution Prevention Plan (SWPPP) that will be required for decommissioning. Upon complete removal of equipment and salvageable material, the site will be cleared of any remaining trash and debris.

After the last remnants of the solar facility are removed and hauled off-site, the land will be tilled to restore the soils to a density and consistency suitable for farming. Finally, the site will be reseeded with an appropriate weed-free seed mix in order to provide soil stability and moisture retention prior to the resumption of farming and/or grazing.

It is expected that the decommissioning of the Aquamarine solar facility will involve a similar level of activity as the original project construction, since it will essentially involve construction in reverse or deconstruction. Decommissioning may involve less equipment use and fewer material deliveries, and the time required for decommissioning may be less than the duration of the original project construction.

CONSTRUCTION OF THE GEN-TIE LINE

As described previously, the solar generation from the Aquamarine solar facility will be conveyed to the State power grid via a new 230-kV Gen-Tie Line to the Gates Substation, which will be the Point of Interconnection (POI) with the PG&E system. The Gen-Tie Line will commence from the southwest corner of the Aquamarine site and run along the east side of the 25th Avenue alignment for a distance of 2.5 miles to Nevada Avenue. The Gen-Tie Line will then turn west and follow Nevada Avenue for a distance of 6.2 miles to the Fresno County line just west of Avenal Cutoff Road. An additional 6.3 miles of Gen-Tie Line will continue along Jayne Avenue in Fresno County to the Gates Substation. The Kings County portion of the Gen-Tie Line is included in the subject CUP application to Kings County. The Fresno County segment of the gen-tie line is the subject of a separate Conditional Use Permit application to the County of Fresno, currently in process. As mentioned, the entire Gen-Tie corridor (in Kings and Fresno Counties) extending to the Gates Substation received programmatic CEQA clearance with WWD's certification of the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan Program EIR in January 2018.

The construction of the various Gen-Tie components is described below.

Gen-Tie Towers and Conductors

Gen-Tie Towers

Throughout the Gen-Tie corridor, the tower structures will consist of self-supporting tubular steel poles (TSPs or monopoles). The monopoles vary in height depending on location. Along the north-south corridor between the Aquamarine site and Nevada Avenue, the monopoles would be uniformly 100 feet in height. Along the Nevada Avenue segment, the monopoles would range in height from 130 to 180 feet. The typical tower-to-tower span in the north-south segment would range from about 600 to 800 feet, whereas in the Nevada Avenue segment the spans would range from about 900 to 1,320 feet. The Kings County portion of the Gen-Tie Line is planned to include about 57 monopoles over its 8.7-mile length. The monopoles would be sited as near to existing roads and farm lanes as practicable in order to minimize disturbance to agricultural operations. The Gen-Tie Line would consist of a single circuit; however, the towers would be capable of supporting two circuits, with one side remaining unstrung until additional transmission capacity is needed in the corridor.

The monopole footings would consist of steel-reinforced concrete piers which would be cast in place. The concrete footings would be to 30 to 60 feet deep and up to 8 feet in diameter, with actual dimensions depending on load and soil conditions, and whether the monopole is at a bend in the line which would require a more robust pole and foundation. The concrete footings would extend 2 to 4 feet above ground level.

Conductors and Tower Components

Each pole structure carries conductors ("wires" or "cables"), insulators, and ground wires. Each circuit consists of three phases, each of which is carried on a separate conductor cable. Conductors must meet minimum ground clearances (at the bottom of the conductor sag), typically 27 to 30 feet above the ground. Greater ground clearances would be required in certain areas to avoid tree crops or other vegetation that could pose a risk to operation of the Gen-Tie Line. Minimum safety clearance requirements and local topography would dictate the exact height of each tower.

Insulators are used to connect the conductors to the tower structures while inhibiting the flow of electric current from energized conductors to the ground or other energized system elements. Insulators and their associated hardware are configured to support conductors while maintaining required distances between phases and grounded structures.

To protect conductors from the hazard of direct lightning strikes, overhead ground wires (shield wires) or fiber optic ground wire is installed on top of tower structures in order to transfer lightning currents into the ground.

Construction of Gen-Tie Line

Construction Overview

It is estimated that the construction of the full Gen-Tie Line to the Gates Substation would be completed in approximately 9 months, with the Kings County segments requiring about 6 months to complete. The construction of the Gen-Tie Line would include the following a general sequence of activities: right-of-way acquisition; surveying and pre-construction activities; preparation of staging areas; construction of temporary access roads; tower installation; conductor installation; installing substation tie-ins; and site reclamation. Each of these activities is described below.

Right-of-way Acquisition

The Gen-Tie Line would require the acquisition of right-of-way (ROW) from the landowners whose properties are traversed by the corridors. The Gen-Tie Line would have a total length of about 15.0 miles, of which approximately 8.7 miles would be in Kings County. The ROW would be in the form of easements, which would allow agricultural activities to continue within the right-of-way. The easement width for the gen-tie would be 100 feet, although some short segments would be wider. It is anticipated that the project applicant would acquire a wider easement along Nevada Avenue, approximately 350 feet wide, in order to accommodate a second gen-tie line in the future. It is noted that the wider Gen-Tie corridor has received programmatic CEQA clearance with WWD's certification of the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan Program EIR in January 2018.

Surveying and Pre-Construction Activities

For surveying on private lands, the project proponent would negotiate rights-of-entry with the affected landowners. Construction survey work would consist of locating the centerline, tower locations, ROW boundaries, and temporary disturbance areas for pulling and tensioning activities, and temporary tower access roads. Once the centerline and disturbance areas have been surveyed and clearly marked in the field, preconstruction surveys for biological resources would be conducted. Geotechnical investigations would also be conducted to determine soil densities and strength for use in soils engineering and structural design.

Construction of Access Driveways

Each monopole site would require vehicular access during construction, and also during Gen-Tie Line operation to allow access for inspection and maintenance. Since most of the Gen-Tie right-of-way would run adjacent to Nevada Avenue, access would be gained directly from this County road without the need for tower access driveways. Along the 2.5-mile Gen-Tie segment running north from Nevada Avenue alongside the 25th Avenue alignment to the Aquamarine site, a temporary access driveway may be required to support heavy construction vehicles and equipment.

Clearing Gen-Tie Right-of-Way

In order to reduce hazards associated with direct contact with trees and vegetation, minimum electrical safety clearances would be required as specified by national electrical safety standards. As such, some trimming or removal of mature vegetation within the Gen-Tie ROW may be required. Trees that could fall onto the lines or affect lines during wind-induced line swing would be removed. Normal clearing procedures would be to top or remove large trees and not disturb smaller trees.

The lands with permanent crops such as nut and fruit orchards would be most affected. Site clearing would be required at the tower sites including a specified permanent clear area surrounding each tower. The temporary clearance area for construction of the monopoles would typically be about 0.75 to 1.0 acres for each pole, and permanent displacement would be about 700 square feet (0.016 acres) for each pole. As mentioned, the monopoles would be sited at the edges of fields near existing public roads and farm roads to avoid cultivated lands to the extent practicable. In some locations, taller towers would be required in order to provide higher conductor ground clearances in order to avoid removal of existing orchard trees beneath the conductor sags.

Preparation of Staging Area

It is anticipated that one construction yard or staging area would be required for the Gen-Tie project to provide for storage of materials (e.g., tower steel, conductor reels, structure hardware, etc.), construction equipment and vehicles, parking areas for crew vehicles, temporary construction offices, and portable sanitation facilities. This staging area is planned for a former cotton gin site on a 17-acre parcel at the northeast corner of Jayne Avenue and SR-269 in Fresno County.

Tower Installation

The first step in tower installation would be to prepare a cleared work area at the tower site to accommodate the construction of the tower footings, laydown areas for materials, work areas for the assembly of the tower structure, and sufficient area to allow necessary crane maneuvers for tower installation. As mentioned, the cleared work area for a typical monopole site would be approximately 0.75 to 1.0 acres in area. The sites would be cleared, graded, and compacted where necessary to accommodate heavy vehicles.

Next, the holes for tower foundations would be bored or augured, and concrete poured in place over the pre-assembled reinforcing steel cages set into the holes. Depending on load requirements and soil characteristics, 100 to 150 cubic yards (cy) of concrete would be delivered to each tower site to install footings or piers (an average of 125 cy is assumed until individual footing depths are determined based on a geotechnical study). Once the concrete has cured, the towers would be bolted to the piers. Sections of pole would be hauled to each tower site and lifted into place with a crane and bolted together.

It is expected that the soils excavated from the tower foundation holes would be distributed over the adjacent lands and would not be exported from the tower sites.

Upon completion of construction activity, a permanent setback area would be kept clear around each tower structure for maintenance access and fire safety purposes. It is expected that the typical finished tower pad, including clearance area, would be approximately 30 feet in diameter and occupy and area of up to 700 square feet (0.016 acres) within a 100-foot wide easement.

Conductor Installation

After the towers are completed, the conductors and ground wires would be installed. This would begin by stringing pilot lines from tower to tower. The pilot lines would guide the pulling of conductors and ground wires, which would be kept under tension to prevent contact with the ground and obstacles. The stringing of pilot lines would be performed by helicopter for the taller monopoles, and boom lifts or aerial man lifts may be used for the shorter towers.

Conductors and ground wires would be strung and tensioned using powered pulling equipment at one end and powered braking or tensioning equipment at the other end of a conductor segment. Pulling and tensioning sites would be spaced about 1 to 2 miles apart and would temporarily occupy areas of areas of 4 acres on average. These stringing equipment sites would mainly be located within the Gen-Tie easements. In locations where the gen-tie alignment changes course, the pulling and tensioning sites could extend beyond the gen-tie easement at these angles or corners, but would not extend more than 500 feet from the permanent easement. As with the monopoles, the precise locations and dimensions of the pulling and tensioning sites would be determined at the engineering design stage.

Given the height of most of the monopoles and the length of the spans, it is anticipated that a helicopter would be utilized for most, if not all, conductor stringing along the Gen-Tie Line. Helicopter services would be obtained on a short-term contract basis from aviation firms in the region. The helicopter landing zone would be located at the staging yard in Fresno County at the northwest corner of Jayne Avenue and SR-269.

There are several locations along the Gen-Tie alignment where the conductors would cross over public roads and highways, aqueducts, and electrical distribution and transmission lines. To protect these underlying features during conductor stringing, guard structures are typically installed to intercept cables and prevent them from dropping below a specified height. Typical guard structures consist of standard wood poles, 60 to 80 feet high, connected by a similar wood cross member to form an "H-frame." Typically, guard structures would be placed on either side of the protected feature, with protective netting strung from the cross members on one guard structure to the cross members on the opposite structure. Guard structures would be designed and installed in accordance with applicable safety requirements. At each crossing location, the guard structure would be removed once the overhead conductors have been secured to towers.

Substation Tie-ins

The Gen-Tie Line would extend to the fence line at the Gates Substation located just west of Trinity Avenue in Fresno County. To make the interconnection, PG&E will construct a new 230-kV service line up to approximately 1,400 feet in length, starting near the intersection of Jayne and Trinity Avenues and extending into the Gates Substation. The service line will hang on approximately three new tubular steel poles, up to approximately 160 feet tall, to be located within PG&E's existing Gates Substation property. Within the substation, modifications may include addition of new bays, circuit breakers, capacitor banks, shunt capacitors, and other electrical equipment. The details of the interconnection at the Gates Substation would be determined during the engineering design phase. .

Site Management during Construction

Dust Control

During construction, water trucks would be used for regular application of water to minimize dust generation. Gen-Tie construction would include compliance with the fugitive dust measures specified in Regulation VIII of the San Joaquin Valley Air Pollution Control District (SJVAPCD).

Drainage and Erosion Control

Measures to prevent erosion during construction would be specified in the Storm Water Pollution Prevention Plans (SWPPPs) required for the Gen-Tie project by the State Water Resources Control Board. The SWPPPs would specify Best Management Practices (BMPs) for erosion control and hazardous material containment to be implemented during construction. Drainage control features would be installed, as appropriate, to minimize stormwater runoff from construction areas.

Construction Waste

During construction, the waste generated would primarily consist of non-hazardous waste materials such as waste lumber, scrap metal, greenwaste, sanitation waste, and common trash. These waste

materials would be collected and taken to the construction staging yard where they would be segregated for recycling or disposal at the appropriate facilities.

Soil excavated for tower footings would be spread over the area immediately surrounding the tower sites. Soil disposal would not be permitted on slopes exceeding 10 percent or within 100 feet of a stream or water body.

Some quantities of hazardous wastes would be generated during construction. These waste materials would include fuels, lubricants, and cleaning solvents, etc. Hazardous wastes generated during construction would be either recycled or disposed of at a Class I disposal facility, as required.

Land Disturbance and Restoration

The construction of the Gen-Tie Line would result in temporary and permanent land disturbance at tower locations and in temporary land disturbance at work sites and staging areas. Table 5 contains estimates of land areas that would be permanently and temporarily disturbed.

TABLE 5

GEN-TIE LINE – LAND DISTURBANCE ESTIMATES – KINGS COUNTY

Gen-Tie Project Feature	Quantity	Land Disturbance (Acres)		
		Total Disturbance Area	Temporarily Disturbed/ To be Restored	Permanently Disturbed
Tower Sites	57	57[1]	56	1[2]
Tower Access Roads	1[3]	6	6	0
Pulling/Tensioning Sites	8	68	68	0
Staging/Material Storage Sites	0[4]	0	0	0
Totals	--	125 acres	124 acres	1 acre

Footnotes:
[1] Temporary disturbance area at each tower site = up to 1.0 acre.
[2] Permanent disturbance area at each tower site = up to 0.016 acres (700 sf) for the planned monopoles.
[3] Temporary tower access road – Nevada Avenue to Aquamarine site: length = 2.5 miles; temporary width = 20 feet. The tower access road will not remain after construction, and will be restored to agricultural use.
[4] The staging area for gen-tie construction is planned to be located in Fresno County at the northwest corner of Jayne Avenue and SR-269 (Lassen Avenue).

Upon completion of each segment of Gen-Tie Line, the areas disturbed during construction would be restored as appropriate. The disturbed areas would include: construction yards and staging areas; work pads and laydown/assembly areas at tower locations; areas disturbed for pulling and tensioning; and guard structure sites. Reclamation would involve the regrading and restoring soil density the disturbed areas with the objective of returning them to pre-construction conditions. A detailed reclamation plan would be prepared at the engineering design stage and incorporated into the plans and specifications for the Gen-Tie project.

Cultivation of row crops and tree crops are anticipated to continue within the Gen-Tie easements. Within Kings County, the Gen-Tie Line would pass through approximately 1.2 miles of existing tree crops. In order to provide adequate clearance between the tree tops and the conductor sags, it is anticipated that taller towers would be used to provide greater ground clearance for conductors and avoid removal of tree crops along the conductor sags. Thus it is not anticipated that any permanent tree crops would be removed beneath the conductor sags.

Construction Workforce, Vehicles, and Equipment

Workforce

Based on information provided by the project engineers, Gen-Tie Line is expected to have a maximum workforce of approximately 59 construction workers on any given day. It is expected that most of construction personnel would be drawn from the communities in the region, although some specialized workers may need to be brought in from outside the area and be temporarily lodged in local hotels. Given the dispersed nature of the construction activities along the Gen-Tie corridor, with relatively few employees traveling to any given work site, it likely would not be practical to provide shuttle service; likewise, opportunities for carpooling would be limited. Although some ridesharing would likely occur, it is assumed that all construction workers would be solo commuters.

During construction, the work activities would be distributed along the Gen-Tie Line, with various crews engaged in surveying, ROW clearing, tower foundation installation, tower assembly and erection, conductor installation, and reclamation. Assuming that all 59 workers would commute solo, the peak traffic generated by construction personnel would be 59 AM trips and 59 PM trips.

Typically, construction would take place in 10-hour shifts during the hours of 7 AM to 5 PM, Monday through Saturday, although work could take place outside these hours if needed. For example, highway crossings may be scheduled during nighttime hours to minimize traffic disruption. In such instances, night lighting would be required for safe working conditions, but the lights would be oriented away from any sensitive receptors nearby.

Construction Deliveries

Equipment and Materials

The construction of the Gen-Tie Line is expected to use approximately 100 pieces of construction equipment and support vehicles at various stages of construction. This would include equipment such as dozers, back-hoes, graders, bobcats, auger trucks, concrete mixer and pump trucks, cranes, fork lifts, puller trucks, tensioner trucks, winch trucks, bucket trucks, water trucks, fuel trucks, skip loaders, tractor trailer trucks, pick-up trucks/crew cabs, compressors, and generators. Most equipment would be brought to the individual sites when needed and would remain at those sites throughout the duration of the activities for which they are needed.

Deliveries of tower steel, hardware, conductor spools, concrete, and equipment would occur throughout the construction period. The equipment and material deliveries would originate from various locations in central California and would utilize regional highways and local roads to reach the work sites along the Gen-Tie corridor.

Concrete and Steel Deliveries

Concrete would be delivered to tower sites by concrete mixer trucks for pouring of the tower footings. It is expected that concrete would be supplied from ready-mix plants located near Coalinga. It is estimated that an average of 125 cubic yards of concrete would be required at each tower location, assuming monopoles with deep footings throughout. Given a concrete mixer truck capacity of 10 cubic yards, an average of 13 concrete deliveries would occur at each tower site. For the 57 tower sites in Kings County, there would be at total of 741 concrete deliveries over the 133-day construction period, or an average of 5.66 deliveries per day.

Deliveries of tower steel and other materials for tower installation would involve approximately 22 round trips by trucks for each tower. The 57 towers in Kings County would involve a total of 1,254 materials deliveries, or an average of 9.4 deliveries per day over the 133-day construction period on the Kings County Gen-Tie segment.

Operation and Maintenance of Gen-Tie Lines

After completion, the Gen-Tie Line would be inspected, maintained, and repaired in accordance with the proponent utilities' procedures and regulatory requirements. Gen-Tie components would be inspected at least once per year for corrosion, equipment misalignment, loose fittings, and mechanical problems. Vegetation, landscaping, and agricultural crops in the vicinity of the towers and conductors would be maintained at clearance distances as required by applicable regulations and safety standards.

2.3 SURROUNDING LAND USES AND SETTING

The lands surrounding the Aquamarine project site consist mainly of agricultural lands along with related irrigation canals, ditches, wells, pump stations, power lines, and farm roads (see Figure 3 – Project Vicinity). The Kent South solar generating facility is located approximately 0.4 miles north, along with an adjacent substation and switching station. There is an unused former agricultural processing facility located 1.2 miles north on the east side of 25th Avenue. The Henrietta substation and peaker plant are located 2.1 miles north on the east side of 25th Avenue. To the east of the Aquamarine site are a series of five dispersed agricultural residences located along and near 22nd Avenue. These residences are located 1.3 to 1.8 miles from the eastern boundary of the Aquamarine site. The nearest ranch complex is the Shannon Ranch located approximately 2.0 miles southwest at the corner of Avenal Cutoff Road and Lincoln/Gale Avenue. The Shannon Ranch includes 20 housing units.

The nearest population centers include the community of Stratford located 3.0 miles east, the City of Lemoore located 7.0 miles northeast, the Santa Rosa Rancheria located 7.5 miles east, the City of Huron located 9.0 miles west, and the community of Kettleman City located 12 miles south. Naval Air Station Lemoore (NASL), and its associated base housing, is located 3.2 miles north of the Aquamarine project site. The Aquamarine Solar Project is partially located within an NASL flight approach/departure zone, and is also within the Military Influence Zone for NASL.

The lands in the vicinity or the Gen-Tie corridor are all in agricultural use, and comprise fallow fields, row crops, tree crops, and vineyards. The nearest structures are at the Stone Land Company Ranch, located on the south side of Nevada Avenue, which includes two dwellings and other ranch buildings.

2.4 RELATED PROJECTS

Approved and Pending Solar Projects

Related projects include 29 solar PV generating projects that have approved or pending Conditional Use Permit applications in unincorporated areas of Kings County, for a total potential generating capacity of 2,252 MW. To date, a total of 22 solar PV projects, with a total generating capacity of 852 MW, have been approved by Kings County. Of these, 17 solar projects have been completed or partially completed, for a total of 537 MW. The nearest approved solar projects to the Aquamarine site include the 22 MW Westside Solar Project (Phases 1 and 2), located directly north, and the 150 MW Mustang 2 Solar Project located adjacent to the project site on the east. An additional 7 solar PV projects, with a potential generating capacity of 1,400 MW, have pending CUP applications with Kings County, including the proposed Aquamarine project. The nearest of these are the 300 MW Slate Solar Project located to the east, the 250 MW Westlands Solar Blue project located adjacent to the south, and the 300 MW Daylight Legacy Solar Project located to the southwest of the project site. These related projects are considered in detail in the cumulative impact analysis in Section 4.21 *Mandatory Findings of Significance*. A table listing the details of these "cumulative projects" (Table 11) is contained in section 4.21, along with a County exhibit (Figure 10) showing the location of each.

Westlands Solar Park Master Plan

The Aquamarine project site lies within the boundaries of the Westlands Solar Park Master Plan area, which encompasses approximately 20,938 acres located to the north, west, and south of the project site. As discussed in Chapter *1. Introduction*, the Master Planning process and associated programmatic CEQA review for the Westlands Solar Park (WSP) Master Plan and Gen-Tie Corridors Plan was completed in January 2018. This master planning process embodied a comprehensive approach for the long-term solar development of the Plan Area and the establishment of the planned gen-tie corridor for transmission of WSP solar generation to the State electrical grid. The Master Plan EIR provides program-level CEQA review for the WSP Master Plan and the Gen-Tie corridor to the Gates Substation. As individual solar projects are brought forward under the Master Plan, each project will be subject to CUP approval and project-specific CEQA review by Kings County, which will be accomplished through the preparation of Mitigated Negative Declarations (MNDs) or Supplemental Environmental Impact Reports (SEIRs), as appropriate. As discussed in Chapter *1. Introduction*, these subsequent MNDs are intended to be tiered from the WSP Program EIR, as provided under CEQA. The environmental analysis in the PEIR provides an evaluation of the impacts of WSP solar development, as well as a comprehensive analysis of cumulative impacts associated with WSP development combined with other cumulative development in the Master Plan area. The cumulative analysis is updated in this MND (see Section 4.21) in order to reflect additional pending and approved projects which have been brought forward since the Program EIR was certified in January 2018.

2.5 OTHER PERMITS AND APPROVALS THAT MAY BE REQUIRED

The following permits and approvals for the Aquamarine Solar Project and Gen-Tie Line may be required from Kings County and other permitting agencies:

County of Kings

- Tentative Parcel Maps (or Lot Line Adjustments) to create parcels corresponding to the project boundaries
- Encroachment Permits for work in County road rights-of-way, and for utility crossings at County roads.
- Transfer Permits obtained from Kings County Public Works Department for oversized or excessive loads on County Roads.
- Building Permits for all aspects of site preparation, grading, and construction for the project.

Other Agencies

- San Joaquin Valley Air Pollution Control District (SJVAPCD): 1) Indirect Source Review (ISR) under Rule 9510; 2) Approval of construction Dust Control Plans under Regulation VIII; 3) Portable Equipment Registration, under Rule 2280, for portable generators and compressors used during construction; 4) Permit to Operate, under Rule 2010, for any equipment greater than 50 horsepower resulting in emissions, e.g., standby generators.
- Regional Water Quality Control Board – Central Valley Region (CVRWQCB): Administration of General Permit for Storm Water Discharges Related to Construction Activities under the National Pollutant Discharge Elimination System (NPDES), including oversight of Storm Water Pollution Prevention Plans (SWPPPs).
- State Water Resources Control Board (SWRCB): As the agency with primary jurisdiction for NPDES permitting in California, applicants for projects subject to the Storm Water General Permit (referenced under Regional Water Quality Control Board above) are required to file a Notice of Intent (NOI) with the SWRCB indicating the intent to comply with the General Permit and to prepare a SWPPP.
- California Department of Transportation (Caltrans): Single-trip transportation permits for oversized or excessive loads on State highways. Permits are issued in coordination with the California Highway Patrol.
- California Public Utilities Commission (CPUC): Sole authority for approval of electrical system improvements to be constructed, owned or operated by PG&E, including substations, switching stations, and interconnections, under CPUC General Order No. 131-D. (Note: Since all elements of the Aquamarine Solar Project, including the on-site substation and off-site Gen-Tie Line are planned to be privately owned, the CPUC will have no jurisdiction over these project elements. The Point of Interconnection (POI) to the State electrical grid and the PG&E system will be at the Gates Substation in Fresno County. As such, the CPUC's jurisdiction will be confined to the area within the perimeter fence line of the Gates Substation where terminations for the Gen-Tie Line will be completed.)

CHAPTER 3 – ENVIRONMENTAL DETERMINATION

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project involving at least one impact that is a "Potentially Significant" as indicated by the checklist on the following pages.

	Aesthetics	X	Agriculture and Forestry Resources
X	Air Quality	X	Biological Resources
X	Cultural Resources		Energy
X	Geology/Soils		Greenhouse Gas Emissions
X	Hazards and Hazardous Materials	X	Hydrology/ Water Quality
	Land Use/Planning		Mineral Resources
	Noise		Population/Housing
	Public Services		Recreation
X	Transportation		Tribal Cultural Resources
	Utilities/Service Systems		Wildfire
	Mandatory Findings of Significance		

DETERMINATION:

On the basis of this initial evaluation:

____ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

__X__ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the proposed proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

____ I find that the proposed project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT is required.

____ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measure based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

____ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been adequately analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable legal standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measure that are imposed upon the proposed project, nothing further is required.

Signature Chuck Kinney Date: 5-13-19

Chuck Kinney, Deputy Director – Planning
Kings County Community Development Agency

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CHAPTER 4 – EVALUATION OF ENVIRONMENTAL IMPACTS

4.1 AESTHETICS

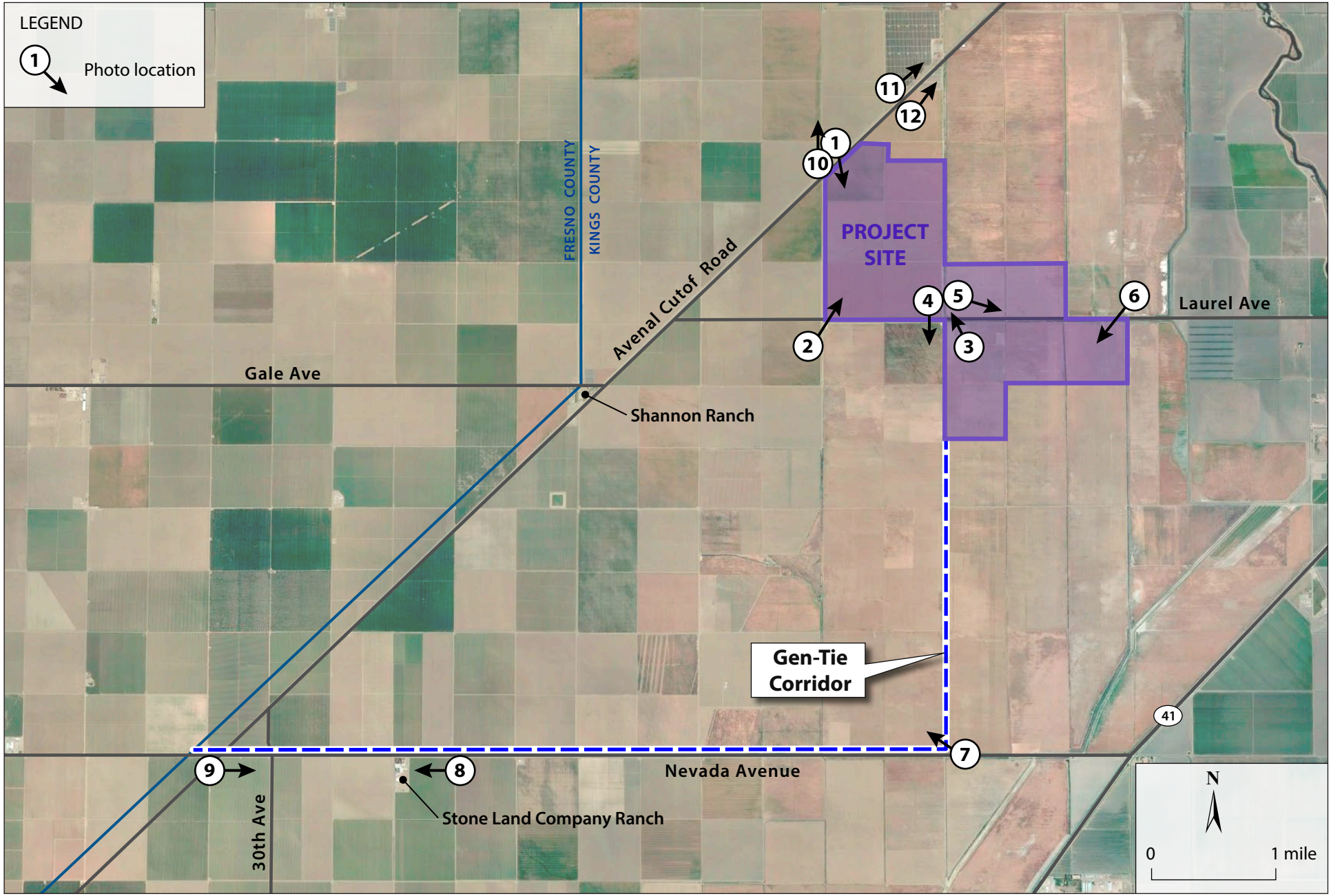
Except as provided in Public Resources Code Section 21099, w*ould the project:*	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	■	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	■
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	■	☐
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	■	☐

Setting

Aquamarine Project Site

The 1,825-acre project site consists entirely of agricultural fields with no buildings or trees (see Figures 8a and 8b – Site Photos). There is an existing agricultural well near the west site boundary, approximately 0.7 miles south of Avenal Cutoff Road. The 70-kV Henrietta to Tulare Lake sub-transmission line runs through the middle of the site from north to south along the 25th Avenue alignment. Agricultural irrigation canals run through the site alongside the 25th Avenue alignment and through the site along Laurel Avenue, and several smaller ditches branch off to the south from the Laurel Avenue ditch within the site. A large agricultural drainage ditch runs along the Avenal Cutoff Road frontage of the project site.

The surrounding lands also comprise agricultural fields devoted exclusively to low growing row crops. Adjacent and nearby lands are the sites of three completed solar PV projects, comprising the Mustang, Orion, and Kent South solar projects located at the northwest corner of Avenal Cutoff Road and 25th Avenue. To the east of the project site are a series of five dispersed agricultural residences located along and near 22nd Avenue. These residences are located 1.3 to 1.8 miles from the eastern boundary of the Aquamarine site. The nearest ranch complex is the Shannon Ranch located approximately 2.0 miles southwest at the corner of Avenal Cutoff Road and Lincoln/Gale Avenue. The Shannon Ranch includes 20 housing units. The Stone Land Company Ranch, located on the south side of Nevada Avenue, approximately 5.0 miles southwest of the Aquamarine site, includes two dwellings and other ranch buildings. To the north, the nearest base housing at Lemoore Naval Air Station is located 3.2 miles from the project site.



Source: Google Earth, 2017

Site Photos - Key Map

Figure 8a

Photo 1: Southward view across western portion of project site from western corner of site at Avenal Cutoff Road.

Photo 2: Northeastward view from southwest corner of site at Laurel Avenue.

Photo 3: Northward view from Laurel Avenue at 25th Avenue.

Site Photos
Figure 8b

Photo 4: Southward view from Laurel Avenue at 25th Avenue.

Photo 5: Eastward view along Laurel Avenue from 25th Avenue.

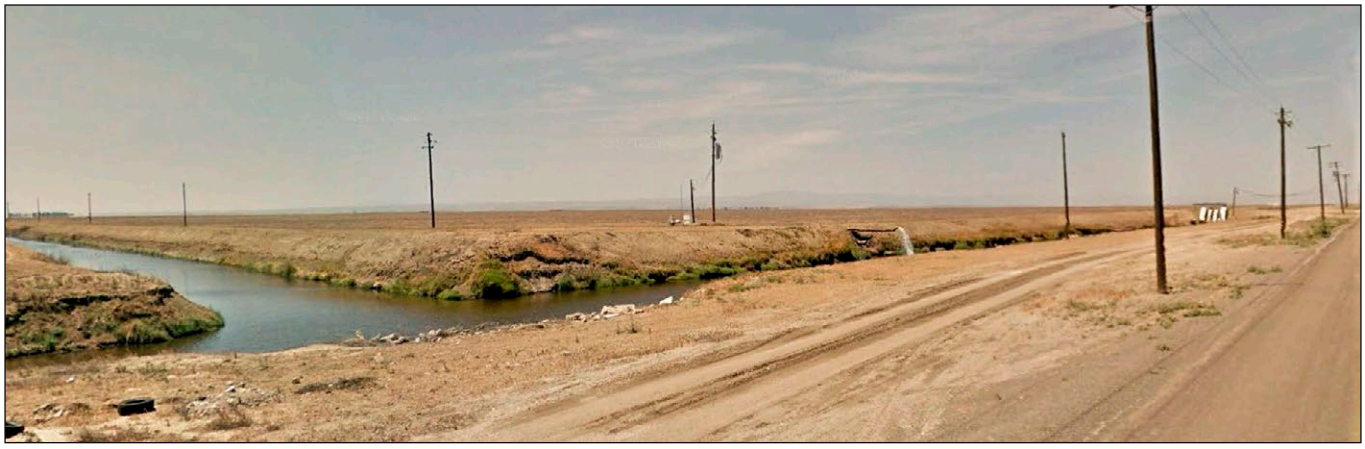


Photo 6: Southwestward view from Laurel Avenue at east edge of site.

Site Photos

Figure 8c

Photo 7: Northwestward view from Nevada Avenue at 25th Avenue.

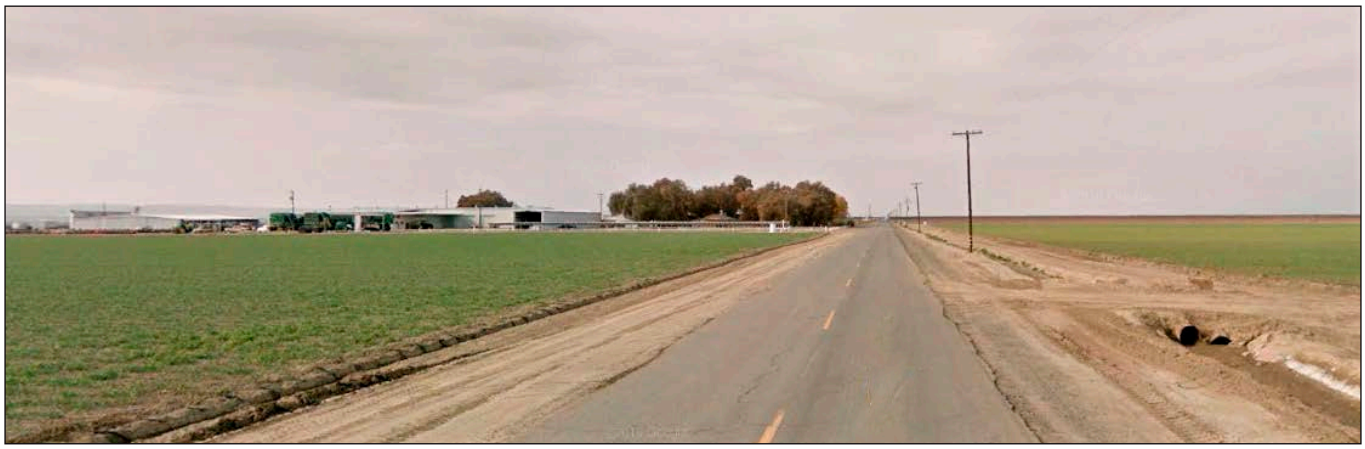


Photo 8: Westward view along Nevada Avenue, east of Stone Land Company Ranch.

Photo 9: Eastward view from junction of Avenal Cutoff Road and Nevada Avenue.

Site Photos

Figure 8d

Photo 10: Northward view across Avenal Cutoff Road from western corner of project site.

Photo 11: Northward view of Kent South solar generating facility and substation, located ½ mile north of the project site.

Photo 12: Eastward view of Westside Solar Project Phase 1, located ½ mile north of project site.

Site Photos

Figure 8e

The Open Space Element of the 2035 Kings County General Plan describes the important scenic resources of the County. The key landscape features include the Kings River to the east and the foothills and mountains in the western portion of County. The project site is approximately 2 miles west of the Kings River, which has a relatively narrow riparian corridor in this reach. At this distance, the project site is not integral to, nor does contribute to, the scenic value of the river or its riparian corridor (Kings County 2010c). To the southwest, the Kettleman Hills rise to an elevation of about 1,200 feet at a distance of approximately 12 miles from the project site. Beyond these foothills, first ridge of the Coast Ranges reaches elevations of approximately 4,400 feet at a distance of about 40 miles. At these distances, the foothills and mountains make up a very small portion of the overall field of view from the project site.

There are no State, County or City-designated or proposed scenic highways or routes in the project vicinity. The only recognized scenic route in the County is the segment of SR-41 running through the southwest corner of the County as it enters the Coast Ranges at SR-33 and continues southwestward to the Kern County line and then on San Luis Obispo County. None of the roadways in the project vicinity are designated or proposed scenic routes.

Gen-Tie Line

The visual character of the lands surrounding the gen-tie corridor is defined by the rural and agricultural landscapes of the valley floor, with the lower foothills of the Diablo Range forming a visual backdrop to the west (see Figures 8c and 8d – Site Photographs). The agricultural landscapes along the gen-tie corridor includes several different cropping patterns, including tree crops, field crops, pasture, and fallow fields, which provide some variety and visual interest. A small number of residential and agricultural support facilities are dispersed throughout the sparsely settled lands in the vicinity. The only residences within view of the gen-tie corridor are 2 dwellings at the Stone Land Company Ranch on the south side of Nevada Avenue east of Avenal Cutoff Road. There are no historic buildings, rock outcroppings, or other scenic resources within or near the gen-tie corridor. The gen-tie corridor includes a few scattered non-orchard trees, but none that are considered scenic resources.

Environmental Evaluation

a) Would the project have a substantial adverse effect on a scenic vista?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact. The Aquamarine project site and Gen-Tie corridor consist of essentially flat agricultural land that is typical of the valley floor, with no topographic variation or features to provide visual interest or vantage points for panoramic views. The nearest locally significant scenic resource is the Kings River corridor which is located approximately 2 miles from the Aquamarine project site, and not within view of the Aquamarine site or gen-tie corridor. The only scenic vistas in the region are of the Kettleman Hills and Coast Ranges to the west and southwest, which are located at least 12 miles from the Aquamarine project site and 9 miles from the Gen-Tie corridor. The Aquamarine project's solar arrays will not exceed 8 feet in height, and thus would not block views of the hills and mountains. Therefore, the impacts of the Aquamarine Solar Project and Gen-Tie Line on scenic vistas would be *less than significant*.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Aquamarine Solar Project and Gen-Tie Line

No Impact. There are no State or County-designated or proposed scenic highways or routes in the vicinity of the Aquamarine site or Gen-Tie corridor, nor are there any recognized scenic resources or vistas in the immediate area (Caltrans 2011, Kings County 2010c). Additionally, there are no rock outcroppings or significant trees on the Aquamarine site or Gen-Tie corridor or in the surrounding area. Similarly, there are no historic buildings on or near the Aquamarine project site or in the vicinity of the Gen-Tie corridor that are listed in the Kings County General Plan Resource Conservation Element (Kings County 2010b) or elsewhere. In summary, there are no known scenic resources that would be substantially damaged by the construction of the Aquamarine Solar Project and Gen-Tie Line, and there would be *no impact* on such scenic resources.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Aquamarine Solar Project

Less-than-Significant Impact. The Aquamarine Solar Project would involve installation of solar arrays throughout the 1,825-acre project site. The solar arrays would be relatively low in profile, reaching a height of about 8 feet at maximum tilt. The inverters and transformers that would be dispersed throughout the site would have a maximum height of about 8 feet, and the meteorological stations would reach heights of about 10 feet. The tallest structural element at the on-site substation would be about 40 feet high, while approaching monopoles from the Gen-Tie Line would be 100 feet high. The solar facilities would be surrounded by perimeter fencing with an overall height of about 8 feet.

The Aquamarine Solar Project would replace the agricultural fields of the site with the relatively low profile structural elements of a solar generating facility. The rows of solar panels would be similar in scale to rows of tall corn or permanent tree crops. The hard edges of the solar equipment would contrast with the softer edges of the planted crops, but would not introduce a new dominant visual element that is substantially out of scale with its surroundings. In addition, over 90 percent of the project would be retained in vegetated ground cover, which would help visually integrate the project with its rural surroundings.

Although the project setting is predominantly rural and agricultural, there are existing structural elements in the immediate vicinity. These include the following: the Westside Solar Project Phase 1 located at the southwest corner of Avenal Cutoff Road and 25th Avenue; the Kent South/Orion/Mustang solar facilities, substation, and switching station at the northwest corner of Avenal Cutoff Road and 25th Avenue; the Henrietta substation and adjacent power plant to the north along 25th Avenue; and the former agricultural processing plant located on 25th Avenue just north of Avenal Cutoff Road. Therefore, the project would not introduce new structural elements to the area.

As discussed under 'Setting' above, the visual quality of the project site and its surroundings is relatively low. The land itself is flat and featureless, and the area is not part of a recognized scenic resource. The number of visual receivers in the area, who would experience the visual changes resulting from the project, is also low. There are no existing residences within at least 1.3 miles of the Aquamarine site, so no residential views would be affected by the project. The only public roads that pass within view of the project are Avenal Cutoff Road and Laurel Avenue. The project frontage along Avenal Cutoff Road is approximately 2,000 feet long, so passing motorists would have fleeting visual contact with the solar project. Laurel Avenue, which passes through the project, is very lightly traveled, so the number of passing motorists who would have visual contact with the project along this roadway would be small.

The Aquamarine Solar Project would result in a visual change of the project site from agricultural to solar generating facility. While this would represent a visual change to the project site, it would not result in a substantial visual change to the immediately surrounding area which already includes 4 solar generating facilities, 2 substations, a power plant, and an agricultural processing plant. The project area is characterized as an area of agricultural uses and certain non-agricultural uses, as specified in the Kings County Zoning Ordinance, which do not adversely affect agriculture. Given the relatively low visual quality of the site and its surroundings, and the very low number of visual receivers who would experience the change in visual setting, the introduction of a non-agricultural land use as represented by the Aquamarine Solar Project, within a visual setting that already includes considerable structural elements, would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. Therefore, the visual impacts associated with the Aquamarine Solar Project would be *less than significant*.

Gen-Tie Line

Less-than-Significant Impact. With regard to the Gen-Tie Line, the towers supporting the power lines would constitute its dominant visual elements. The towers are planned to consist entirely of tubular steel monopoles, which would range in height from 100 to 180 feet. Conductors would be strung between the towers which would be spaced at intervals ranging from 600 to 1,320 feet. The planned use of monopoles instead of lattice towers would substantially reduce the profile of the towers and their visual effects. The gen-tie line would run alongside Nevada Avenue which passes entirely through flat agricultural landscapes where scenic value is limited. The only residences within one mile of the Gen-Tie Line are the 2 dwellings at the Stone Land Company Ranch on the south side of Nevada Avenue east of Avenal Cutoff Road. These dwellings are set back 180 feet from the Gen-Tie corridor at its nearest point, and would be visually screened from the Gen-Tie Line by a dense stand of landscaping trees planted throughout the front setback area of the ranch property. The nearest monopole would be located to the west of the ranch complex which would minimize potential visual intrusion into the settings of the ranch dwellings. With the distance separation from the towers, and the screening of the conductors, and the utilization of steel monopoles, the Gen-Tie Line would not result in a substantial change to the visual character or quality of the setting of these residences.

Nevada Avenue is a very lightly traveled County road, so few travelers would observe the monopoles and conductors of the adjacent Gen-Tie Line. Given the generally low visual quality of the Gen-Tie setting, and the low level of potential visual impact upon existing residences and public vantage points along Nevada Avenue, the visual effects associated with the Gen-Tie Line would minimal. Therefore, the Gen-Tie project would not substantially degrade the existing visual character of public views of the site and its surroundings, and the impact would be *less than significant*.

d) Would the project create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

The topics of lighting and glare are discussed separately below.

Lighting

Aquamarine Solar Project

Less-than-Significant Impact. Under existing conditions, the Aquamarine project area is subject to night lighting from the solar generating facilities and substation at the corner of Avenal Cutoff Road and 25th Avenue, and from security lighting at the agricultural processing plant and the Henrietta substation/power plant complex to the north along 25th Avenue, as well as headlights from vehicles traveling on Avenal Cutoff Road and to a lesser extent Laurel Avenue. The Aquamarine Solar Project will introduce new sources of light to the area, although permanent exterior lighting will be mainly located at the site entrances, the operations yards, and the on-site substation. Lighting within the solar fields will be confined to the inverter/transformer pads, which will be activated only when needed by switch or motion sensors. There will be no lighting along any internal access driveways, or around the project perimeter. Permanent lighting would be no brighter than required to meet safety and security requirements, and would be hooded so as to be directed only on-site, as required under the County's Development Code.

During the construction phase, the staging areas would have security lighting. Temporary night lighting would be needed if and when construction activity extends into the nighttime hours. As with lighting during facility operations, the temporary lighting would provide the minimum illumination needed and would be directed away from facility boundaries.

Potentially sensitive receptors to unwanted illumination from the project primarily include existing residences in the vicinity and travelers on Avenal Cutoff Road driving by the project. As mentioned, the nearest existing residences are at least 1.3 miles from the project site and would not be affected by project lighting. Travelers along Avenal Cutoff Road passing the project site would notice the increased light sources associated with the project. Since these motorists would already be subject to lighting from the new solar facilities and substation located a half-mile northeast along Avenal Cutoff Road, the project lighting would not introduce a new source of night lighting to a previously dark rural nighttime setting. Since all lighting within the Aquamarine Solar Project and the existing solar facilities to the northeast would be directed away from the roadway, the project lighting would not create direct illumination that could pose a safety hazard to passing traffic.

In summary, the Aquamarine project would introduce new sources of permanent and temporary nighttime lighting to the project area, although most of the solar facility would not be illuminated. Since there are no residential receivers in the vicinity, the lighting introduced by the project would have no impact to existing residences. Motorists passing by the project site would notice an increase in permanent night lighting, but the overall effect would be reduced by the presence of existing similar light sources nearby. Therefore, the lighting impacts resulting from the Aquamarine Solar Project would be *less than significant*.

Gen-Tie Line

Less-than-Significant Impact. With regard to the Gen-Tie Line, construction of the Gen-Tie facilities is expected to occur during daylight hours. However, in the event night construction may occasionally be required, temporary lighting would be required for security and safety. Night lighting may also be required for security at staging areas. However, it anticipated that any such lighting would be directed inward toward the work areas and that direct lighting beyond the work areas would be avoided. Night lighting at any given work site would be temporary since each tower would be completed in a matter of days, and works sites for conductor stringing would continuously shift along the Gen-Tie corridor. Therefore, the potential lighting impacts due to Gen-Tie Line construction would be *less than significant*.

Once completed, the Gen-Tie Line would not include lighting, so no new sources of light would occur. Therefore, the potential lighting impacts from the operation of the Gen-Tie Line would be *less than significant*.

Glare

Aquamarine Solar Project

Less-than-Significant Impact. Glare is an intense light effect resulting primarily from the reflection of sunlight off reflective surfaces when the angle of the sun to the surface is such that sunlight is reflected toward the receiver, causing potential discomfort or distraction of the receiver, or potential impairment of vision under extreme conditions. The main source of potential glare from the project is solar panels, but other sources can include vehicle windshields and reflective building materials, as well as direct illumination.

All of the solar panels installed at the Aquamarine project will be composed of photovoltaic cells. Solar PV employs glass panels that are designed to maximize absorption and minimize reflection to increase electricity production efficiency. Untreated silicon reflects about one-third of incoming sunlight. To limit reflection, solar PV modules are constructed of dark, light-absorbing materials, and are given an anti-reflective coating or textured surface. With the addition of the anti-reflective coating or treatment, the reflectivity can be reduced to less than 4 percent of incoming sunlight (EE Times 2012). In comparison, the reflectivity of standard glass is over 20 percent, or about double that of uncoated solar panels. By contrast, concentrating solar thermal systems, which employ arrays of highly polished mirrors to refocus the radiation on a receiver tube or tower, reflect about 90 percent of the incoming sunlight (FAA 2010). (The potential for the project to create a source of glint or glare that would affect pilots stationed at NAS Lemoore is considered less than significant, and is discussed in further detail in Section *4.9 Hazards and Hazardous Materials*.)

Further, PV solar systems are designed to maximize absorption of sunlight by keeping the panel surfaces oriented directly to the sun as much as possible. When the sun is high in the sky, sunlight light is reflected skyward. However, when the sun is low in the sky (i.e., at dawn or dusk), the angle of reflectance increases, thereby increasing the potential for reflection at or near ground level. The potential for ground-level reflection is greatest with fixed-tilt solar arrays, which are oriented lengthwise in an east-west direction. When the sun is very low in the sky at sunrise and sunset (i.e., in the east or west), there is a potential for sunlight to be reflected obliquely from the east-west oriented panels at a similarly low angle to observers at ground level. The potential for ground-level reflection is

substantially reduced in tracking systems, such as those planned for the Aquamarine Solar project, which are arranged in north-south oriented rows and allow panels to follow the sun across the sky from east to west. Since tracking systems minimize the angle of incident sunlight at the panel surface, the angle of reflectance is also smaller thus tending to direct reflected sunlight skyward even when the sun is low in the sky. Since tracking systems are arranged in north-south oriented rows, the potential for sunlight to be obliquely reflected to ground level receivers is further reduced since the sun is never low in the sky in a northerly or southerly direction.

Since solar panels are designed specifically to maximize absorption of sunlight and minimize loss of incident sunlight through reflection, the potential for glare is also greatly reduced even during occasional periods when sunlight from module surfaces may be reflected to ground-level receivers. The panels would therefore not be expected to result in intense glare that would adversely affect views in the area or cause discomfort to receivers.

Residences in the vicinity of solar facilities can be subject to potential low-intensity glare from solar panels. However, since there are no existing residences within at least 1.3 miles of the Aquamarine project site, there would be no potential glare effects upon residential receivers from the project.

Automobiles passing by the project solar facilities could be subject to low-intensity glare from nearby solar panels at certain times of day. As discussed above, the potential for glare would be greatest at sunrise and sunset when oblique reflections could be received at or near ground level, although ground-level reflection is expected to occur primarily with fixed-tilt mounting systems, and much less so with the tracker systems planned for the project. However, due to the low level intensive of reflection from the PV solar panels and the short duration of driver exposure to any low-intensity reflected light, traffic passing by the project would not be subject to significant visual impairment or a safety hazard due to potential glare.

In summary, the potential for glare effects from the project solar facilities to adversely affect daytime views or cause visual impairment would be *less than significant*. (See Section *4.9 Hazards and Hazardous Materials* for discussion of potential glare hazard to aviation.)

Gen-Tie Line

Less-than-Significant Impact. With regard to the Gen-Tie Line, the transmission monopoles, conductors, and insulators could have potentially reflective surfaces that could cause glare. However, it is expected that the materials selected for the transmission projects would be non-reflective and non-refractive, or would be treated with non-reflective coatings. Therefore, the potential glare impacts from the Gen-Tie Line would be *less than significant*.

REFERENCES – AESTHETICS

Caltrans 2011 California Department of Transportation (Caltrans). 2011. *California Scenic Highway Mapping System*. September. http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm

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FAA 2010 — Federal Aviation Administration (FAA). 2010. *Technical Guidance for Evaluating Selected Solar Technologies on Airports*. November. https://www.faa.gov/airports/environmental/policy_guidance/media/airport-solar-guide.pdf

Kings County 2010b — Kings County. 2010. *2035 Kings County General Plan – Resource Conservation Element*. Adopted January 26, 2010. http://www.countyofkings.com/home/showdocument?id=3112

Kings County 2010c — Kings County. 2010. *2035 Kings County General Plan – Open Space Element*. Adopted January 26, 2010. http://www.countyofkings.com/home/showdocument?id=3114

4.2 AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection, including the Forest and Range Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

	Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less Than Significant**	**No Impact**
a)	***Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?***	☐	■	☐	☐
b)	***Conflict with existing zoning for agricultural use, or a Williamson Act contract?***	☐	☐	■	☐
c)	***Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)?***	☐	☐	☐	■
d)	***Result in the loss of forest land or conversion of forest land to non-forest use?***	☐	☐	☐	■
e)	***Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?***	☐	☐	☐	■

A comprehensive description of the agricultural setting of the Aquamarine Solar Project area is provided in the certified PEIR on the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan, which is incorporated into this document by reference PEIR pursuant to Section 15150 of the State CEQA Guidelines. The description of the overall agricultural setting is found on pages 3.2-1 through 3.2-20 of the Draft PEIR (WWD 2017b). A description of the specific conditions on the Aquamarine Solar Project site and Gen-Tie corridor is provided below.

The discussion and analysis in this section is partly based on the *Soil and Water Analysis Report* prepared by Provost & Pritchard. The report is included in this document as Appendix A.

Agricultural Setting

Aquamarine Solar Project and Gen-Tie Line

The 1,825-acre Aquamarine project site consists entirely of agricultural fields and supporting features such as, irrigation canals and piping, unimproved farm roads, and electric power lines. In recent years, the site has been cultivated for winter wheat during the wet seasons and left fallow during the dry seasons.

Soils and Irrigation Water

According to the Natural Resources Conservation Service (NRCS) Soil Survey of Kings County, the majority of soils on the Aquamarine site consist of Lethent clay loam, which is rated as Land Capability Class 7s (non-irrigated) and 3s (irrigated). Approximately 5 percent of the site soils comprise of Calflax clay loam, saline-sodic, which also has a Land Capability Class rating of 7s (non-irrigated) and 3s (irrigated). Land Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to pasture, grazing, forestland, or wildlife habitat. Class 3 soils have severe limitations that restrict the choice of plants or require special conservation practices, or both. The letter "s" indicates that the soil has soil limitations in the root zone such as salinity. Lethent clay loam has a Storie index rating of 41, and Calflax clay loam, saline-sodic, has a Storie index rating of 39. Soils with a Storie Index rating of 80 or greater are classified as Grade 1 or prime soils. The Lethent and Calflax soils on the site are classified as Grade 3 and Grade 4, respectively. Both soil units are saline-alkali and therefore are best suited to salt- and alkali-tolerant, drought resistant crops. These soils also are limited by very slow permeability, and have a high shrink-swell potential, and are highly corrosive to concrete and steel (NRCS 1986; NRCS 2006).

The saline conditions that are native to the Lethent and Calflax clay loams have been exacerbated on the project site by perched groundwater, poor natural subsurface drainage, and the application of insufficient water to leach salt from the root zone. Groundwater in the area is high in salinity, carbonates and bicarbonates, and boron. These groundwater conditions are typically above the maximums recommended for tolerant crops. In addition, the added salts from the groundwater further increase the salinity of the surface soils. Therefore, growing crops on the site utilizing solely groundwater is not feasible.

Historically, irrigation water for the site has been largely provided by imported surface water delivered through the Westlands Water District (WWD). (It is important to note, however, that since the early 2000s, the portions of the project site located east of the 25th Avenue alignment have been under the ownership of WWD, which has retired these lands from irrigated agriculture due to high soil salinity, perched groundwater, and poor subsurface drainage conditions. As such, these lands are no longer eligible to receive imported surface water for agricultural irrigation.) The maximum water allocation available to the privately-owned (and non-retired) northwestern portion of the site for agricultural purposes through WWD under its long-term contract with the federal Central Valley Project (CVP) is approximately 2.6 acre-feet per acre per year. (Note: The maximum allocation for agricultural uses is not the same as the maximum allocation for non-agricultural uses, also known as Municipal and Industrial (M&I) uses, which is 5 acre-feet per 160 acres for solar facilities, as discussed in section *2.2 Project Description*.) However, the actual deliveries of CVP contract water to WWD have been dramatically curtailed in recent years due to prolonged drought conditions. Also, since WWD was one of the last water districts to be provided with federal water, it has a junior entitlement to CVP water, which places it at a very low priority for water deliveries during times of scarcity. During the last 10 years, WWD received an average of 35 percent of its contract water. In 2014 and 2015, WWD received 0 percent allocation of CVP water, and in 2016 received 5 percent of its contract water (WWD 2018). In order to meet the irrigation requirements of planted crops, the reduced surface water supplies are augmented with groundwater. But since the groundwater is high in salinity, the amount of groundwater that can be blended with the higher quality imported surface water is limited by the generally low salinity tolerance of crops. In addition, the annual "safe yield" of the WWD groundwater basin is 135,000 to 200,000 acre-feet, or about 0.24 to 0.35 acre-feet per acre over the 568,000 irrigable acres

within Westlands Water District's service area. Groundwater pumping in excess of safe yield results in long-term drawdown of the water table and is not sustainable (WWD 2013, WRP 2019).

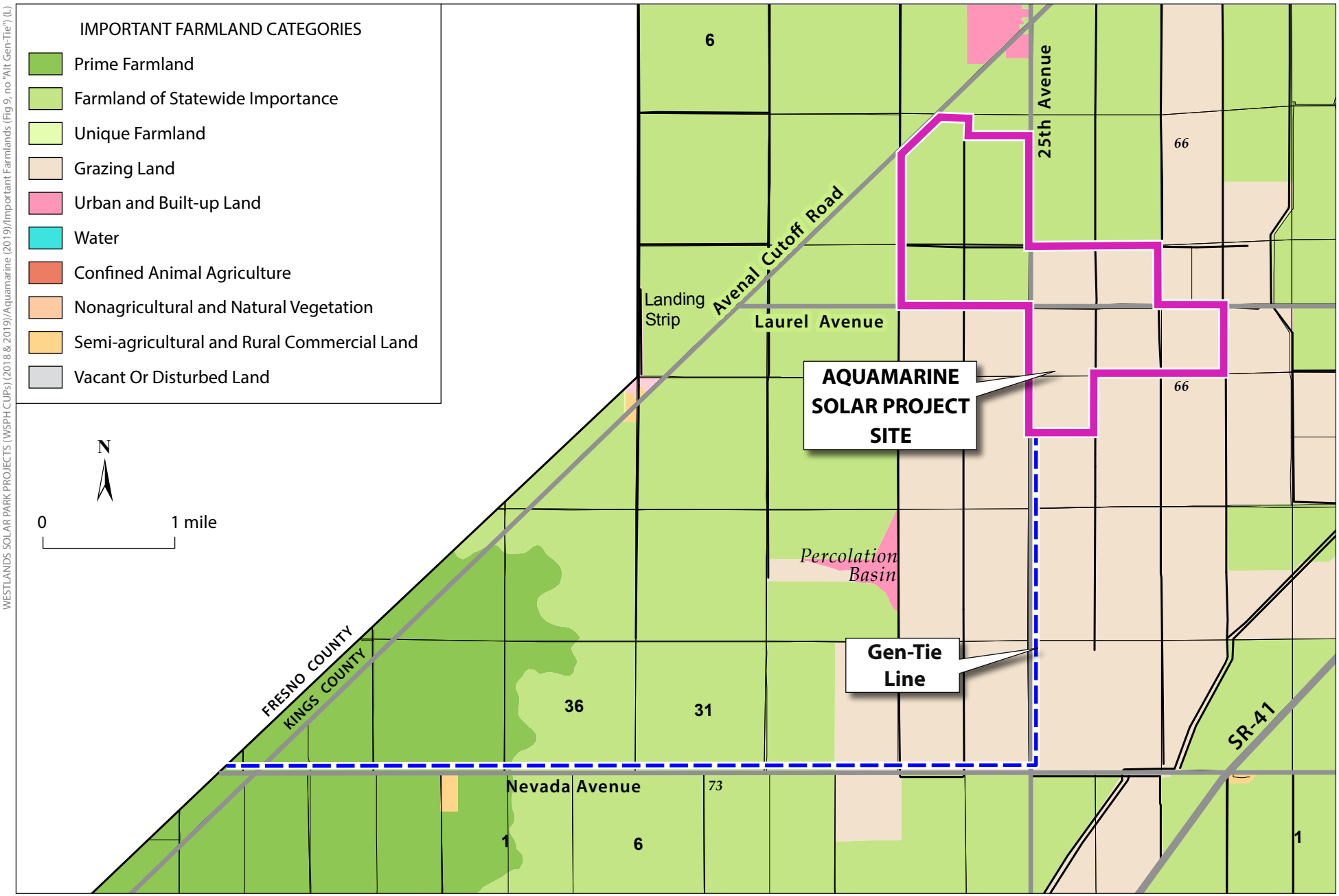
The soil and water analysis report prepared by Provost & Pritchard in December 2018 found that the site soils have significant limitations related to salinity. (See the technical report in Appendix A for sampling test data.) The naturally occurring saline-sodic conditions at the site are exacerbated by poor natural drainage conditions and insufficient water supplies to promote leaching of salts from the root zone. The study found that lack of subsurface drainage systems and a sustainable disposal outlet are expected to increase soil salinity conditions. The report concluded that the adverse soil conditions and water quality and availability conditions make dry-farm seasonal sheep grazing a reasonably foreseeable agricultural activity to occur on the project site (P&P 2018).

Within the Gen-Tie corridor, the soils consist of Lethent clay loam (61%), Westhaven loam (30%), and Westhaven clay loam (9%). According to the Natural Resources Conservation Service (NRCS) Soil Survey of Kings County, the Lethent and Westhaven clay loams are both rated as Land Capability Class 7s (non-irrigated) and 3s (irrigated). Land Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to pasture, grazing, forestland, or wildlife habitat. Class 3 soils have severe limitations that restrict the choice of plants or require special conservation practices, or both. The letter "s" indicates that the soil has soil limitations in the root zone such as salinity. Lethent clay loam has a Storie index rating of 41, and Westhaven clay loam has a Storie index rating of 65. Soils with a Storie Index rating of 80 or greater are classified as Grade 1 or prime soils. The Lethent and Calflax soils on the site are classified as Grade 3. Both soil units are saline-alkali and therefore are best suited to salt- and alkali-tolerant, drought resistant crops. These soils also are limited by very slow permeability, and have a high shrink-swell potential, and are highly corrosive to concrete and steel. Westhaven loam has a Land Capability Class 1 (irrigated) and 7c (non-irrigated), with the letter "c" indicating a climatic limitation such as temperature or lack of soil moisture. Westhaven loam has a Storie Index rating of 95. This soil unit has moderate permeability, moderate shrink-swell potential, slight erosion hazard, and is highly corrosive to uncoated steel and moderately corrosive to concrete (NRCS 1986).

Farmland Mapping and Monitoring Program

The California Department of Conservation (CDOC) administers and maintains the statewide Farmland Mapping and Monitoring Program (FMMP), under which farmland is mapped by several categories including Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Grazing Land. Figure 9 shows the most recent edition of the Important Farmland Map published by CDOC for areas of Kings County that include the Aquamarine Solar Project site, the Gen-Tie Line, and surrounding areas. As shown, the portion of the Aquamarine project site located west of the 25th Avenue alignment (approximately 872 acres) is mapped as "Farmland of Statewide Importance," which is defined as lands which are similar to prime farmland but have minor shortcomings, and which have been in irrigated agriculture sometime during the prior four years. The portion of the project site located east of the 25th Avenue alignment (approximately 953 acres) is mapped as "Grazing Land," which is defined as land on which the existing vegetation is suited to the raising of livestock. As discussed above, this eastern portion of the project site has been retired from irrigated agriculture by WWD.

The Kings County portion of the Gen-Tie Line is approximately 8.7 miles long. As shown in Figure 9, approximately 2.3 miles of the Gen-Tie Line pass over Prime Farmland, and another 2.4 miles pass through Farmland of Statewide Importance, and the final 4.0 miles pass through Grazing Land (CDOC 2017).



Source: CDOC, 2017

Important Farmlands

Figure 9

Williamson Act

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting the use of those lands to agricultural or compatible uses. There are two types of contracts available, including Land Conservation contracts, which have a term of 10 years, and Farmland Security Zone (FSZ) contracts, which have a term of 20 years. In return for placing their lands under these contracts, the restricted parcels are assessed at lower property tax rates. The Williamson Act stipulates that local governments adopt rules governing the administration of agricultural preserves, including rules related to compatible uses, provided the rules are consistent with the following principles of compatibility (Gov. Code § 51231).

Gov. Code § 51238.1. (a) Uses approved on contracted lands shall be consistent with all of the following principles of compatibility:

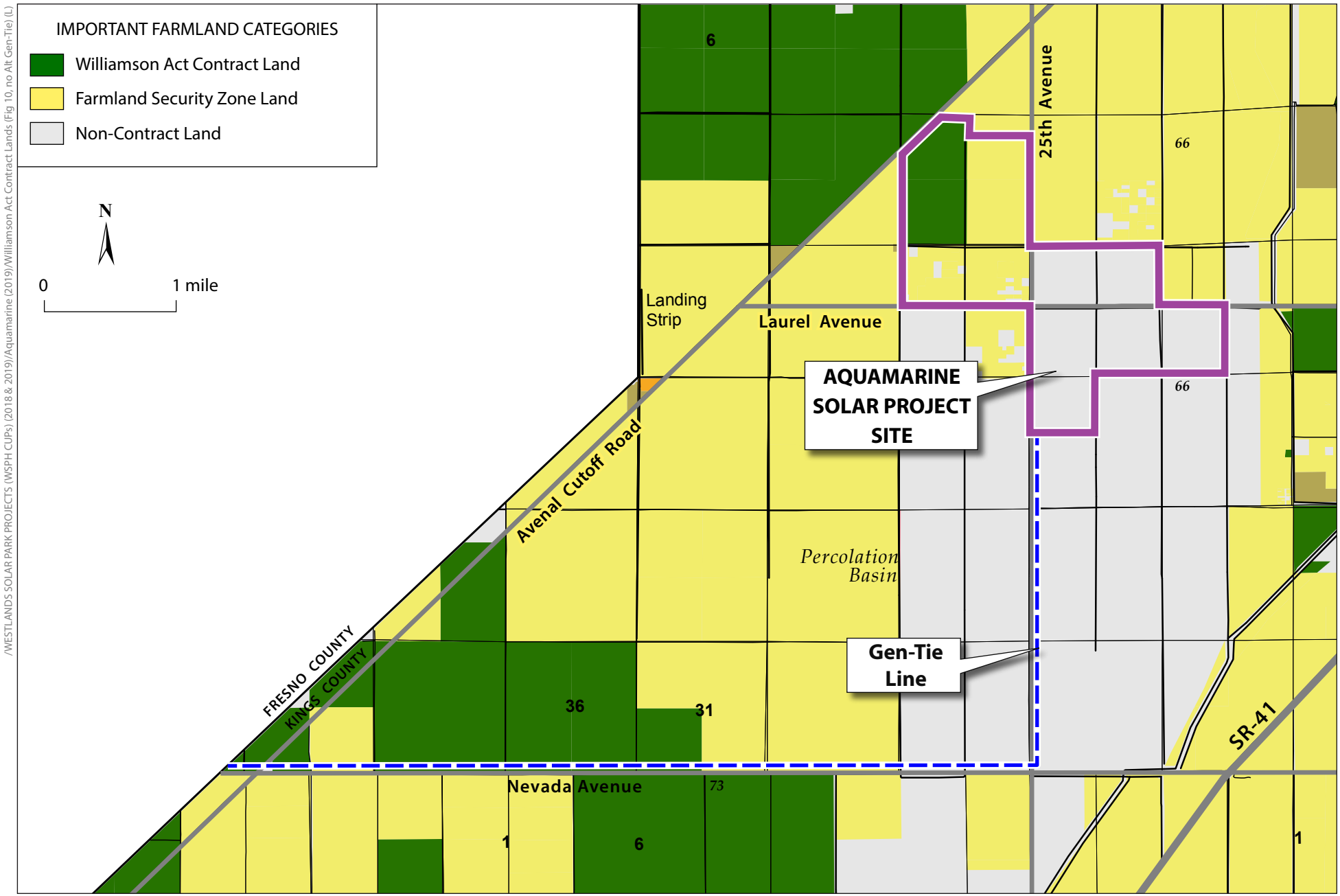
(1) The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels or on other contracted lands in agricultural preserve.

(2) The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations on the subject contracted parcel or parcels may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping.

(3) The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

Figure 10 shows the status of Williamson Act contracts on the Aquamarine Solar Project site, the Gen-Tie Line, and surrounding areas. Within the Aquamarine site, all contracted lands are located within Sections 9 and 16, which are located west of the 25th Avenue alignment. The contract information on parcels subject to the Williamson Act is listed in the following table.

Section	APN	Acreage	Contract No.	Preserve/Zone	Document No.	Date Recorded
9	026-010-040	160.3	FSZ 97	50	9905978	3/19/1999
9	026-010-057	79.85	WA 1899	719	1330 185/4815	4/1/1985
9	026-010-058	120.45	FSZ 97	50	9905978	3/19/1999
9	026-010-059	216.85	WA 1899	719	1330 185/4815	4/1/1985
16	026-290-008	5.0	FSZ 174	50	0000971	1/1/2001
16	026-290-010	2.5	FSZ 97	50	9905978	3/19/1999
16	026-290-026	1.25	WA 1956	301	9004649	2/28/1990
16	026-290-032	2.5	FSZ 97	50	9905978	3/19/1999
16	026-290-033	5.0	FSZ 174	50	0000971	1/1/2001
16	026-290-042	10.0	FSZ 97	50	9905978	3/19/1999
16	026-290-046	1.25	FSZ 97	50	9905978	3/19/1999
16	026-290-051	1.25	FSZ 174	50	0000971	1/1/2001
16	026-290-057	1.25	FSZ 97	50	9905978	3/19/1999
16	026-290-059	2.5	WA 1959	301	9003163	2/28/1990
16	026-290-063	1.25	FSZ 97	50	9905978	3/19/1999
16	026-290-072	1.5	WA 739	301	956-758	7/28/1970
16	026-290-073	181.25	FSZ 97	50	9905978	3/19/1999
16	026-290-074	10.0	FSZ 97	50	9905978	3/19/1999
16	026-290-076	1.25	FSZ 97	50	9905978	3/19/1999
16	026-290-077	6.25	FSZ 97	50	9905978	3/19/1999
16	026-290-078	42.5	FSZ 97	50	9905978	3/19/1999
16	026-290-079	10.0	FSZ 97	50	9905978	3/19/1999



Source: CDOC, 2015

Williamson Act Contract Lands

Figure 10

All of the project lands east of the 25th Avenue alignment (approximately 953 acres) are non-contracted lands and not subject to the Williamson Act. Along the Gen-Tie Line, the easterly 3.5-mile segment is not under Williamson Act contracts, while the westerly 5.3-miles are under either Land Conservation contracts or FSZ contracts (Kings County 2013a).

Kings County Priority Agricultural Land Model

The Kings County Community Development Agency has developed a model which considers additional factors in defining the value of prime farmland in order to rank County farmlands on a priority basis. The factors considered in the model include soil classification, crop value, availability of water resources, the need for open space buffers between urban areas, and the planned orderly growth of communities. The resulting mapping of Priority Agricultural Land, as mapped in the General Plan Resource Conservation Element (Figure RC-13) shows the following priority categories on the Aquamarine Solar Project site: westerly 872 acres (west of 25th Avenue alignment) – "Low-Medium Priority"; central 792 acres – "Low Priority"; and extreme easterly 161 acres – "Very Low Priority." Along the Gen-Tie Line, the priority categories range from Low Priority to Medium Priority, with a small area of Medium High Priority located north of Nevada Avenue at Avenal Cutoff Road (Kings County 2010b).

2035 Kings County General Plan

The Land Use Map of the 2035 Kings County General Plan Land Use Element shows the land use designation on the eastern and northeastern 754 acres of the project site as "Exclusive Agriculture – 40 acre," and the remaining 1,071 acres of the site as "General Agriculture – 40 acre." Agricultural land use designations fall under the broader General Plan category of Agricultural Open Space. The lands traversed by the Gen-Tie Line are largely designated "General Agriculture – 40 acre," with a small segment along Nevada Avenue near the 28th Avenue alignment designated as "Exclusive Agriculture – 40 acre." In addition to a range of agricultural uses and ancillary activities, the General Plan LU Policy B7.1.3 allows solar voltaic generating facilities within the Agricultural Open Space areas of the County (Kings County 2010a).

Kings County Zoning Ordinance

As designated in the Kings County Zoning Plan, the entire Aquamarine site and all the lands traversed by the Gen-Tie Line are zoned "AG-40 General Agricultural-40" (Kings County 1964). As provided in Article 4 of the Kings County Development Code, commercial solar photovoltaic electrical generating facilities are permitted in this zoning district subject to a granting of a Conditional Use Permit by the Kings County Planning Commission. Public utility uses such as transmission lines are permitted uses in this zoning district (Kings County 2016).

Article 11, Section 1112(B)(2) of the Kings County Development Code requires that commercial-scale solar photovoltaic electrical facilities conform to specified standards. Most of these standards relate to agricultural land. The required standards, and the project's conformity with the standards, are addressed in item 'b)' in the Environmental Evaluation that follows (Kings County 2016).

Kings County Right-to-Farm Ordinance

The Kings County Code of Ordinances Section 14-36.1, the "Notice of Disclosure and Acknowledgment of Agricultural Land Use Protection and Right to Farm Policies of the County of Kings," (Right-to-Farm) requires the approvals of rezonings, land divisions, zoning permits, and residential building permits include a condition that notice and disclosure be provided, which is to be recorded with the property

title, that specifically acknowledges and notifies all future owners that they are in proximity to agricultural uses, and lists the types of operations and possible nuisances or inconveniences associated with farming such as equipment and animal noises; farming activities conducted on a 24-hour, 7-day a week basis; odors from manure, fertilizers, pesticides, chemicals, or other sources; the aerial and ground application of chemicals and seeds, dust; flies and other insects; and smoke. The ordinance states that the County does not consider normal farming operations involving these activities and effects to be a nuisance, and that current owners and future purchasers should be prepared to accept such annoyances or discomfort from normal, usual, and customary agricultural operations, facilities, and practices. This Right-to-Farm disclosure and acknowledgement establishes the primacy of agricultural operations over other land uses, and would reduce the potential for conflict which could adversely affect the continued viability of such adjacent agricultural operations (Kings County 2002).

Kings County Williamson Act Implementation Procedures

As required under the Williamson Act, the County has established procedures for implementation of the Act at the local level. Those implementation procedures include *Uniform Rules for Agricultural Preserves in Kings County*, which identifies the uses that shall be permitted as "Commercial Agricultural Uses," and "Compatible Uses," on lands under Williamson Act contracts, including Farmland Security Zone contracts. Permitted compatible uses include single-family residences, accessory structures, agricultural processing facilities, gas and oil wells, and public utility and public service structures and buildings, among other uses.

The current Kings County Williamson Act implementing procedures include the following uniform rules for agricultural preserves that pertain to solar photovoltaic facilities:

> "Commercial solar photovoltaic system facilities that are designed primarily for the production of electrical energy for third party consumption are not compatible under the provisions of Government Code Section 51238.1(a). For purposes of determining compatibility, a project must be determined consistent with the principles of compatibility under Section 51238.1(a). Ordinarily, a solar project will be found compatible if the applicant provides a soil reclamation plan and financial assurances, and if the economic output of agricultural operations on the contracted parcel or parcels on which the project is located will be 90-percent of pre-project output. However, on November 26, 2013, the Board of Supervisors adopted Resolution No. 13-058, recognizing that due to reduced surface water deliveries, poor groundwater quality and severe groundwater overdrafts, impaired soil conditions, and regulatory burdens, circumstances exist on agricultural preserves located within that portion of Kings County south of State Route 198, west of State Route 41, and northeast of Interstate 5 that limit the use of much of the land with the territory for agricultural activities, such that it is reasonably foreseeable that certain parcels located there that currently are used for more intensive agricultural activities will be used in the near future for less intensive uses, including dry farm seasonal grazing. Notwithstanding the present agricultural use of the land, solar farming as a concomitant use with dry farm seasonal grazing or similar commercial agricultural activity may be deemed a compatible use within this region of the County if the applicant provides a soil reclamation plan and financial assurances, and if a finding can be made, based upon substantial evidence, and taking into account surface water availability, ground water quality and availability, and soil conditions, that the proposed concomitant commercial agricultural operation is a reasonably foreseeable use of the land (Kings County 2013b)."

Environmental Evaluation

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Aquamarine Solar Project

Less-than-Significant Impact with Mitigation Incorporated. The portion of the Aquamarine project site located west of the 25th Avenue alignment (approximately 872 acres) is mapped as "Farmland of Statewide Importance," and the portion of the project site located east of the 25th Avenue alignment (approximately 953 acres) is mapped as "Grazing Land," under DOC's Farmland Mapping and Monitoring Program (CDOC 2015). The Aquamarine Solar Project would occupy the site for a period of 25 years. During operation of the solar facility, the majority of the site area would be vegetated with native grasses. At the end of the productive life of the solar generating facility, the facility would be decommissioned.

Unless mitigated, the installation of the Aquamarine Solar project on the site would result in the conversion of 872 acres Farmland of Statewide Importance on the site (i.e., all of the lands located west of the 25th Avenue alignment) to non-agricultural uses. This would represent a significant impact to Farmland. The solar development of the portion of the project site located east of the 25th Avenue alignment (i.e., "Grazing Land") would result in a less-than-significant impact on Farmland, and therefore that portion of the project site does not require mitigation for Farmland impacts.

In order to reduce the project impacts to agricultural resources of the Aquamarine Solar Project site to less-than-significant levels, the following mitigation measures shall be implemented in the portion of the project site located west of the 25th Avenue alignment in conjunction with the solar development of that portion of the project site.

> ***Mitigation Measure AG-1: Agricultural Management Plan.*** *Prior to the issuance of a building permit, the applicant shall submit to Kings County an Agricultural Management Plan (AMP) that provides for the ongoing agricultural productivity of the 872-acre portion of the project site located west of the 25th Avenue alignment for the life of the project. The AMP shall specify that at least 90 percent of this area of the site shall be vegetated with grasses and forbs and shall be managed for dry farm seasonal sheep grazing. The AMP shall include specific provisions for soil preparation and revegetation including specifications for a seed mix which is appropriate to the soil and climatic conditions in the absence of irrigation, methods of avoiding invasive species, and a list of acceptable vegetation that meets the dietary needs of sheep. The AMP shall include detailed provisions to ensure the successful establishment of the planned vegetative cover, and shall identify appropriate maintenance activities, including conditions under which herbicides may be used, and particularly the identification and selection of herbicides that are non-toxic to livestock and wildlife. The AMP shall also prescribe the management practices for sheep grazing. The AMP shall include provisions for ongoing monitoring and annual reporting of agricultural activity on the site to the Kings County Community Development Agency. The AMP shall also comply with the requirements of the Kings County Development Code related to weed abatement and pest control.*

In order to ensure that the soils on the entire project site are reclaimed upon decommissioning of the solar facility, the following mitigation measures shall be implemented.

Mitigation Measure AG-2: Soil Reclamation Plan. *Prior to the issuance of a building permit, the applicant shall submit, for review and approval by the Kings County Community Development Agency, a Soil Reclamation Plan (Plan) for the restoration of the entire project site at the end of the project's useful life. The Plan shall contain an analysis of general pre-construction conditions of the project site, and the site shall be photographically documented by the applicant prior to the start of construction. The Plan shall contain specific measures to restore the soil to approximate its pre-project condition, including (1) removal of all above-ground and below-ground project fixtures, equipment, and non-agricultural driveways, (2) tilling to restore the sub-grade material to a density and depth consistent with its pre-project condition, (3) revegetation using a Kings County-approved grasses and forbs seed mixture designed to maximize revegetation with noninvasive species shall be broadcast or drilled across the project site, and (4) application of weed-free mulch spread, as needed, to stabilize the soil until germination occurs and young plants are established to facilitate moisture retention in the soil. Whether the project area has been restored to pre-construction conditions shall be assessed by Kings County staff. Additional seedlings and applications of weed-free mulch shall be applied to areas of the project site that have been determined to be unsuccessfully reclaimed (i.e., restored to pre-project conditions) until the entire project area has been restored to conditions equivalent to pre-construction conditions. All waste shall be recycled or disposed of in compliance with applicable law. The applicant shall verify the completion of reclamation within 18 months after expiration of the project use permit with the Planning Division staff.*

Mitigation Measure AG-3: Financial Assurance. *Prior to the issuance of a building permit, the applicant shall post a performance or cash bond, submit a Certificate of Deposit, submit a letter of credit, or provide such other financial assurances acceptable to the County, in an amount provided in an Engineer's Cost Estimate, approved by the Kings County Community Development Agency, to ensure completion of the activities under the Soil Reclamation Plan. Every 5 years from the date of completion of construction of the project, the applicant shall submit an updated Engineer's Cost Estimate for financial assurances for the Plan, which will be reviewed every 5 years by the Kings County Community Development Agency to determine if the amount of the assurances is sufficient to implement the Plan. The amount of the assurances must be adjusted if, during the five-year review, the amount is determined to be insufficient to implement the Plan.*

By requiring that agricultural use continues on the western portion of the project site for the life of the Aquamarine Solar Project, as specified in the Agricultural Management Plan in Mitigation Measure AG-1, the impact from the temporary and partial use of the Farmland of the project site for non-agricultural uses would be reduced to a less-than-significant level during the operational life of the project. By requiring that the entire project site be restored to its pre-project baseline conditions following decommissioning of the project, pursuant to the Soil Reclamation Plan specified in Mitigation Measure AG-2, as ensured with the accompanying Financial Assurance stipulated in Mitigation Measure AG-3, the impact from the potential permanent conversion of Farmland and grazing land of the project site to non-agricultural use would be reduced to a less-than-significant level. In conclusion, with the incorporation of the above-specified agricultural mitigation measures

into the project, the potential impact to the agricultural resources of the project site would be *less than significant*.

Gen-Tie Line

Less-than-Significant Impact. Approximately 54 percent of the 8.7-mile Kings County segment of the Gen-Tie Line passes through Prime Farmland or Farmland of Statewide importance. The Gen-Tie Line would result in permanent disturbance only at the sites of the monopoles, each of which would result in the permanent removal approximately 700 square feet of Farmland. The approximately 30 monopoles planned on lands mapped as Farmland would result in a total displacement of 21,000 square feet (less than ½ acre) of Farmland. This would represent a *less-than-significant impact* to Farmland.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Aquamarine Solar Project

Less-than-Significant Impact. The following discussion begins with a consideration of the Williamson Act, which is followed by a discussion of the applicable provisions of the Kings County Development Code, which constitutes the County's zoning ordinance.

Williamson Act

Within the Aquamarine project site, the northwesterly 296.6 acres are under a Williamson Act Land Conservation Contract, and the remaining site area located west of 25th Avenue (574.6 acres) is subject to a Farmland Security Zone (FSZ) contract under the Williamson Act. The project applicant proposes to avoid conflict with the Williamson Act and FSZ contracts by maintaining a use on the site that meets the principles of compatibility pursuant to Government Code Section 51238.1(a) by maintaining reasonably foreseeable agricultural operations on the project site. This is discussed in detail below in terms of the applicable sections of the Government Code.

Government Code Section 51238.1 (a) Uses approved on contracted lands shall be consistent with all of the following principles of compatibility:

(1) The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels or on other contracted land in agricultural preserves.

Discussion. The productive agricultural capability of the western portion of the project site would be maintained during the life of the project by implementation of an Agricultural Management Plan which specifies the ongoing maintenance of vegetative cover over the western portion of the site for sheep grazing. Since more than 90 percent of the project site area would be maintained in vegetated cover, the use of the site for solar generation would not prevent the productive concomitant agricultural use of the site during project operation. The very light footprint of the solar generating facility upon the site would allow for the preservation of native soil cover in place and allow for low impact removal of solar arrays and electrical equipment at the end of the facility's productive life. The long-term productive agricultural capability of the project site after decommissioning of the solar generating facility would be ensured through implementation of Mitigation Measure AG-2 which requires implementation of

a Soil Reclamation Plan and contains detailed provisions on decommissioning, soil conditioning, revegetation, waste disposal, monitoring, and follow-up measures to ensure that the site has been effectively restored to pre-project conditions.

Solar facility operations would generally involve low levels of on-site activity consisting mainly of occasional visits by maintenance crews, and periodic visits by panel cleaning and vegetation maintenance crews. Traffic generation would be very light, thus minimizing the potential for conflicts with agricultural vehicles and equipment on public roadways. Dust generation during project operations would not occur since the project would include no exposed soils that could be mobilized as windborne dust (e.g., over 90 percent of the site would be vegetated; approximately 8 percent of the site would consist of durable dust free road surface as required by the County's Improvement Standards, and less than 1 percent of the site would be covered by impervious surfaces of equipment pads, the O&M building, and the paved project entries and parking areas). The potential introduction of invasive weed species by the project would be minimized through implementation of the Weed Abatement Plan required under Article 11, Section 1112.B.2.e of the Kings County Development Code. The County's Right-to-Farm Ordinance would ensure that adjacent and nearby agricultural operations are not constrained by the need to reduce or eliminate minor incidental effects of cultivation upon adjacent and nearby solar facility operations. During project construction and decommissioning, the disturbance of soil could potentially generate dust. However, these project phases would be temporary in duration, lasting two years or less. Thus the impact of potential dust generation on the long-term productive agricultural capability of adjacent and nearby lands would not be significant. The less-than-significant impact with respect to dust generation would be further reduced through implementation of the Dust Control Plan to be approved by the San Joaquin Valley Air Pollution Control District prior to commencement of ground disturbing activities on the project site, pursuant to Air District Rule 8021.

(2) The use will not significantly displace or impair current or other reasonably foreseeable agricultural operations. Uses that significantly displace agricultural operations on the subject contracted parcel or parcels may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping.

Discussion. In accordance with Government Code Section 51231, Kings County has adopted procedures for implementing the Williamson Act at the local government level, including rules related to compatible uses that are consistent with the Williamson Act's principles of compatibility. As discussed under 'Agricultural Setting' above, the current Kings County Williamson Act implementing procedures provide the following specific guidance in considering the compatibility of solar photovoltaic facilities in agricultural preserves:

> "Ordinarily, a solar project will be found compatible if the applicant provides a soil reclamation plan and financial assurances, and if the economic output of agricultural operations on the contracted parcel or parcels on which the project is located will be 90-percent of pre-project output. However, on November 26, 2013, the Board of Supervisors adopted Resolution No. 13-058, recognizing that due to reduced surface water deliveries, poor groundwater quality and severe groundwater overdrafts, impaired soil conditions, and regulatory burdens, circumstances exist on agricultural preserves located within that portion of Kings County south of State Route 198, west of State Route 41, and northeast of Interstate 5 that limit the use of much of the land within the territory for agricultural

> activities, such that it is reasonably foreseeable that certain parcels located there that currently are used for more intensive agricultural activities will be used in the near future for less intensive uses, including dry farm seasonal grazing. Notwithstanding the present agricultural use of the land, solar farming as a concomitant use with dry farm seasonal grazing or similar commercial agricultural activity may be deemed a compatible use within this region of the County if the applicant provides a soil reclamation plan and financial assurances, and if a finding can be made, based upon substantial evidence, and taking into account surface water availability, ground water quality and availability, and soil conditions, that the proposed concomitant commercial agricultural operation is a reasonably foreseeable use of the land (Kings County 2013b).

As mentioned, only the 872-acre portion of the project site located west of the 25th Avenue alignment is subject to Williamson Act contracts, and therefore only that portion of the site is subject to the Williamson Act implementing procedures and guidance discussed above. The following is a point by point evaluation of the project's consistency with the above County guidance with respect to the western portion of the project site.

First, the project site is located within the area identified in Board of Supervisors' Resolution No. 13-058 as being subject to circumstances, such as reduced surface water deliveries and impaired soil conditions that limit the use of much of this land to dry farm seasonal grazing as a reasonably foreseeable use of the land.

Second, as discussed under item 'a)' above, Mitigation Measure AG-2 requires the implementation of a Soil Reclamation Plan for the project, and Mitigation Measure AG-3 requires the provision of financial assurances for implementation of the project Soil Reclamation Plan.

Third, as described in Section *2.2 Project Description*, the project site plan retains permeable soil over 90 percent of the site area, which is to be vegetated with native seed mix for dry farm seasonal sheep grazing on the western portion of the site (which constitutes a reasonably foreseeable use of the land, as discussed in the first item above).

Fourth, there is substantial evidence that the project site is subject to reduced surface water availability, limitations due to groundwater quality and availability, and impaired soil conditions, such that dry farm seasonal grazing is a reasonably foreseeable use of the land. These conditions are discussed in turn below.

> Surface Water Supply. The western portion of the project site is dependent upon imported CVP surface water deliveries through Westlands Water District (WWD), while the eastern portion of the site owned by WWD is not eligible to receive surface water deliveries. For a number of years, the WWD has been subject to curtailment of delivered water, ongoing drought conditions, environmental regulations, and the low priority position of the WWD, compared to other CVP contractors, in receiving its federal contract water during years of water shortage. Consequently, during the last 10 years, WWD received an average of 35 percent of its contract water, and in 2014 and 2015 WWD received 0 percent allocation of CVP water, and in 2016 received 5 percent of its contract water.

Groundwater Availability. According to the Westlands Water District, the safe yield of the WWD groundwater basin is equivalent to approximately 0.24 to 0.35 acre-feet per acre per year (i.e., safe yield of 135,000 to 200,000 af/yr over the 568,000 irrigable acres within the WWD service area = 0.24 to 0.35 af/ac/yr)(WWD 2013, WRP 2019). During years when sufficient supplies of irrigation water are available, the crops typically grown on the project site include wheat and cotton, which require approximately 1.5 and 2.5 acre-feet per acre per year of irrigation water, respectively. For comparison, tomatoes and other vegetables require about 1.5 af/ac/yr, and tree crops require 2.5-3.0 af/ac/yr, while alfalfa hay requires 3.5 af/ac/yr (WWD 2013). Thus, during years with curtailment of surface water deliveries, groundwater pumping does not provide enough water to make up the difference in supporting these crops. Overpumping beyond safe yield results in progressive lowering of the water table and is not sustainable.

Groundwater Quality. As shown in the Soil and Water Analysis Report prepared by Provost & Pritchard in December 2018 (included as Appendix A to this document), groundwater in the project area has high concentrations of sodium, chloride, boron, carbonates and bicarbonates, which limit the volumes that can be applied given the limited tolerance of crops to these elements. Therefore, growing crops utilizing solely groundwater is not feasible.

Soil Conditions. The Provost & Pritchard Report also states that the native soils of the site have naturally high salt levels, and have been exacerbated by poor natural drainage. The short supply of high quality imported water limits the amount of surface water that can be applied to pre-irrigate the soil to leach out some salts. Long term soil salinity conditions are expected to increase due to lack of a subsurface drainage system and a sustainable leachate disposal outlet.

All of these conditions have progressively exacerbated soil salinity levels such that irrigated cultivation will cease to be feasible on the western portions of the site in the near term future, as is already the case in the eastern portions of the project site. Lab tests conducted by Provost & Pritchard of 21 soil samples taken from the western portion of the project site showed that all samples had excessive salt concentrations, with most samples containing several times more salt than the threshold level for crops. All samples also contained excessive levels of boron, which is toxic to plants and results in stunted growth and reduced yields. The Provost & Pritchard report concluded that due to severe limitation of reliable water availability and significant impairment of soil quality due to high salinity, the project site is not suitable for sustaining long-term agricultural crop production, and that a reasonably foreseeable agricultural use of the site would be dry land farming with seasonal grazing. (The full soil and water analysis technical report is included as Appendix A of this document.)

(3) The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

Discussion. The Aquamarine project is a self-contained solar generating facility and does include electrical infrastructure with excess capacity that could be used to support similar solar generating facilities on adjacent contracted land. The project is associated with a 230-kV Gen-Tie Line which would have more capacity than needed to convey project-generated power to the Gates Substation. However, this Gen-Tie Line is part of the approved Westlands Solar Park Master Plan and Gen-Tie Corridors Plan which has received programmatic CEQA review under a

certified Program EIR. As such, the Gen-Tie Line provides for additional solar development on adjacent lands for which a Master Plan of solar development has been approved. The solar projects developed under the Master Plan would be subject to Kings County's Conditional Use Permit requirements, which would include the same requirements described above for the maintenance of concomitant agricultural activity (as applicable) with the solar farms, and would be subject to the same requirements for implementation of reclamation plans when the solar facilities are decommissioned. As such, the planned solar development on adjacent lands would be compatible with the Williamson Act and would not result in the termination of existing Williamson Act contracts or Farmland Security Zone contracts.

The Aquamarine project would not result in the construction of new roadways, beyond internal maintenance driveways, that would provide new vehicular access to adjacent contracted land. Since the project would not include any excess roadway access or capacity that could serve adjacent contracted land, it would not induce the owners of such lands to remove adjacent contracted lands from agricultural use due to newly available roadway access.

Unlike urban development, the solar generating facility would not induce other development nearby, either for the purpose of providing support services or for taking advantage of services provided by the project. Solar generating facilities neither provide nor require urban services and therefore would not attract or induce other development nearby. Moreover, since such unplanned urban development would not be permitted on adjacent or nearby lands under the applicable agricultural zoning, the project would not result in the removal of agricultural preserves from adjacent contracted land through inducement of urban growth.

As discussed under Subsection (1) above, the low intensity of solar facility operations would generally minimize the potential for operations-related impacts to adjacent agricultural lands. Therefore, the project would not result in the removal of adjacent contracted land by way of introducing an incompatible land use to the site.

In summary, the proposed Aquamarine Solar Project would satisfy all of the Williamson Act principles of compatibility, as further defined by Resolution of the Kings County Board of Supervisors, for land use proposed for lands under Williamson Act contract, including the Farmland Security Zone contracts, in effect on the western portion of the project site.

County Zoning

As designated in the Kings County Zoning Plan, the entire site is zoned "AG-40 General Agricultural-40." As provided in Article 4 of the Kings County Development Code, commercial solar photovoltaic electrical generating facilities are permitted in this zoning district subject to a granting of a Conditional Use Permit by the Kings County Planning Commission. Therefore, the Aquamarine Solar Project would be consistent with the County's agricultural zoning for the site upon the granting of the subject Conditional Use Permit for the project.

Article 11, Section 1112(B)(2) of the Kings County Development Code (which is the County zoning ordinance) requires that commercial-scale solar photovoltaic electrical facilities conform to specified standards. Most of these standards relate to agricultural land. As such, the required standards, and the project's conformance with those standards, are addressed in turn below.

1. *The proposed site is located in an area designated as either "Very Low Priority," "Low Priority," or "Low-Medium Priority" land according to Figure RC-13 Priority Agricultural Land (2035 Kings County General Plan, Resource Conservation Element, Page RC-20). "Medium Priority" land may be considered when comparable agricultural operations are integrated, the standard mitigation requirement is applied, or combination thereof.*

   Discussion. The General Plan Resource Conservation Element (Figure RC-13) shows the following priority categories apply to the Aquamarine Solar Project site: westerly 872 acres (west of 25th Avenue alignment) – "Low-Medium Priority"; central 792 acres – "Low Priority"; and extreme easterly 161 acres – "Very Low Priority" (Kings County 2010b). Therefore, it meets the requirement that solar facilities be located on lands designated as either "Very Low Priority," "Low Priority," or "Low-Medium Priority" agricultural land.

2. *The proposed site is located within 1 mile of an existing 60 KV or higher utility electrical line.*

   Discussion. An existing 70-kV sub-transmission electrical line runs through the center of the project site along the 25th Avenue alignment. Therefore, the project would satisfy the finding that it is located within 1 mile of an existing 60-kV line or higher.

3. *Agricultural mitigation is proposed for every acre of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance converted for a commercial solar facility. The agricultural mitigation shall preserve at a ratio of 1:1 an equal amount of agricultural acreage of equal or greater quality in a manner acceptable to the County that coincides with the life of the project. Agricultural mitigation on land designated "Medium-High" or higher priority land shall preserve an equivalent amount of agricultural acreage at a ratio of 2:1.*

   Discussion. Approximately 872 acres of the Aquamarine site is mapped as Farmland of Statewide Importance under the Department of Conservation's Farmland Mapping and Monitoring Program. However, as discussed above, the project would include continued agricultural use, in the form of dry farm seasonal sheep grazing on more than 90 percent of the site area, concomitantly with the solar facility use on that portion of the project site. As discussed, dry farm seasonal sheep grazing is a reasonably foreseeable agricultural use of the site under the compatibility principles of the Williamson Act, and thus would not be considered a conversion of farmland to a non-agricultural use. Implementation of the Agricultural Management Plan for the western portion of the project, as required under Mitigation Measure AG-1, would ensure the maintenance of seasonal sheep grazing on that portion of the site for life of the project. Mitigation Measures AG-2 and AG-3 would ensure that all of the soils of the project site are reclaimed to pre-project conditions upon decommissioning of the solar facility. Therefore, the project would not result in the conversion of Farmland of Statewide Importance to non-agricultural use, and no further agricultural mitigation would be required. As such, this finding is not applicable to the proposed project.

4. *The project includes a reclamation plan and financial assurance acceptable to the County that ensures the return of the land to a farmable state after completion of the project life, and retains surface water rights.*

   Discussion. As discussed above, Mitigation Measures AG-2 and AG-3 would require a soil reclamation plan along with financial assurance to ensure its implementation. The soil reclamation plan and financial assurance would be subject to approval by the County

Community Planning Agency prior to the issuance of construction permits. Since the project site has no surface water rights *per se*, there are no surface water rights to be retained. (CVP surface water has historically been supplied to the site by Westlands Water District, although only the westerly 872 acres of the site are currently eligible to received imported surface water. However, landowners do not hold any rights to receive these water deliveries, but must instead apply for surface water deliveries each year, and are provided water allocations based on CVP water availability for that year. As discussed above, CVP surface water deliveries have averaged 35 percent of contract amounts over the past 10 years. In extreme drought years, such as 2014 and 2015, no CVP water allocation was provided to WWD farmers.) Based on these facts, this project will comply with this provision of the Kings County Development Code.

5. *The project includes a pest management plan and weed abatement plan to protect adjacent farmland from nuisances and disruption.*

   Discussion. The proposed project includes the preparation and implementation of a Pest Management Plan and Weed Abatement Plan, as required under the County Development Code. The Weed Abatement Plan would specify that native seed mixes used to revegetate the project site are free of weeds. The plan would also ensure that combustible vegetation on and near the project boundary would be actively managed during the construction and operational phases to minimize fire risk. Vegetation height would be kept low to the ground through a combination of sheep grazing and mechanical equipment. The gravel driveways to be constructed around the project perimeter would provide fire breaks. Herbicides would be applied if warranted by site conditions as specified in the Weed Abatement Plan, but would be restricted to those considered environmentally safe. The Pest Management Plan would reduce the potential for pests to inhabit the project site. The Pest Management Plan would set action thresholds, identify pests, specify prevention methods as a first course of action, specify control methods as a second course of action, and establish a quantitative performance goal of nuisance reduction to adjacent farmland. Rodenticide would be selected and used in a manner that minimizes impacts to protected biological species. Since the project would be implementing these measures under the Pest Management Plan and Weed Abatement Plan for the project, this standard would be met.

6. *The project establishes internal access roads that do not exceed a maximum distance of 300 feet between lanes.*

   Discussion. As shown in Figure 4 – Site Plan, the project includes parallel internal access lanes with a minimum width of 20 feet at intervals of less than 300 feet. Therefore, the project would conform to this standard.

7. *The project includes a solid waste management plan for site maintenance and disposal of trash and debris.*

   Discussion. A solid waste management plan would be prepared for the project to prescribe internal procedures for site maintenance and collection and disposal of solid waste during project construction and operation. The non-hazardous waste generated during construction and operation would be segregated on-site for recycling or disposal at a Class III landfill. Hazardous wastes generated during project construction and operation would be either recycled or disposed of at a Class I disposal facility, as required. The preparation and

implementation of a solid waste management plan, as proposed, would conform to this standard.

8. *The project site is not located on Williamson Act or Farmland Security Zone contracted land, unless it meets the principles of compatibility under Government Code section 51238.1(a). Otherwise, the contract is proposed for cancellation or is eligible and converts to a Solar Easement.*

   Discussion. Within the project site, the northwesterly 296.6 acres are under a Williamson Act Land Conservation Contract, and the remaining site area located west of 25th Avenue (574.6 acres) is subject to a Farmland Security Zone (FSZ) contract under the Williamson Act. However, as discussed in detail above, the proposed Aquamarine Solar Project would satisfy all of the Williamson Act principles of compatibility, as further defined by Resolution of the Kings County Board of Supervisors, for land use proposed for lands under Williamson Act contracts, including Farmland Security Zone contracts.

In summary, the project is consistent with the zoning for the Aquamarine site, and would conform to all of the specific standards required in the Development Code for the granting of Conditional Use Permits for solar generating facilities. Therefore, the project would result in *no impact* with respect to conflicting with the applicable zoning as set forth in the County Development Code.

Gen-Tie Line

Less-than-Significant Impact. The lands traversed by the Gen-Tie Line are all within the A-40 General Agriculture-40 zoning district. The Kings County Development Code lists electrical transmission lines as a permitted use in this zoning district (Kings County 2016). In addition, the Kings County Williamson Act Implementation Procedures list electrical transmission lines as a permitted compatible use on contracted lands (Kings County 2013b). Therefore, the Gen-Tie Line would not conflict with existing zoning or a Williamson Act contract, and as such there would be *no impact* in this regard.

c) *Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)?*

Aquamarine Solar Project and Gen-Tie Line

No Impact. Neither the Aquamarine project site nor the Gen-Tie corridor is currently zoned forest land, timberland, or Timberland Production per the cited statutes, and there are no lands in the vicinity that are so zoned. No portion of the Aquamarine project site, Gen-Tie Line, or adjacent land is zoned for forestland or timberland, according to the Kings County Zoning Plan (Kings County 1964). As such, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* with respect to conflict with existing zoning for such land, or in terms of causing the rezoning of such lands.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

Aquamarine Solar Project and Gen-Tie Line

No Impact. There is no forest land on the Aquamarine project site, the Gen-Tie corridor, or in the vicinity. As such, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* in terms of loss or conversion of forest land.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?

Aquamarine Solar Project

Less-than-Significant Impact. As discussed under items 'a)' and 'b)' above, the Aquamarine project would implement several mitigation measures that would ensure maintenance of agricultural production on the western portion of the site for the life of the solar generating facility, and would ensure reclamation of the site soils to pre-project conditions upon decommissioning of the solar facility. As also discussed under items 'a)' and 'b)' above, the project would not induce conversion of other farmlands to non-agricultural uses by way of providing excess infrastructure capacities that could facilitate development on adjacent or nearby lands, or by way of introducing a land use that is incompatible with agricultural production. The project would involve no other changes that could result in the conversion of farmland to non-agricultural use. Therefore, the Aquamarine Solar Project would have a *less-than-significant impact* in this regard.

Gen-Tie Line

Less-than-Significant Impact. The Gen-Tie Line has been designed to minimize displacement and disruption to adjacent agricultural operations. To the extent practicable, the monopoles are planned to be placed at the edges of existing fields, and the conductor spans are planned to be long enough to minimize the placement of monopoles within the cultivated portions of fields. The overall footprint of the Gen-Tie Line would be very light, resulting in a total of less than one acre of displaced farmland. Thus the Gen-Tie Line would not adversely affect existing agricultural operations to the extent that farming on these lands would be impaired or impeded. Thus the Gen-Tie Line would not indirectly result in conversion of Farmland to non-agricultural use, and the impact would be *less-than-significant*.

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4.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.				
Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less Than Significant**	**No Impact**
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	■	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	■	☐	☐
c) ***Expose sensitive receptors to substantial pollutant concentrations?***	☐	☐	■	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	■	☐

This section is based on the air quality assessment report prepared by Illingworth& Rodkin (I&R) in December 2018. The I&R technical air quality report is contained in Appendix B of this document. (Please refer to the I&R report for detailed discussions of climate and air basin characteristics, existing air quality conditions, health effects of air pollutants, regulatory setting, regional attainment of air quality standards, air quality plans, and detailed technical analysis of air quality impacts.)

In preparing the air quality assessment for the Aquamarine Solar Project and Gen-Tie Line, Illingworth & Rodkin followed the San Joaquin Valley Air Pollution Control District (SJVAPCD) guidance for air quality analysis contained in its Guide for Assessing and Mitigating Air Quality Impact (GAMAQI)(SJVAPCD 2015).

Air Quality Setting

Aquamarine Solar Project and Gen-Tie Line

The primary air pollutants that would be emitted by the Aquamarine Solar Project and Gen-Tie Line include ozone (O_3) precursors (NO_x and ROG), carbon monoxide (CO), and suspended particulate matter (PM_{10} and $PM_{2.5}$). Other regulated (or "criteria") pollutants, such as lead (Pb) and sulfur dioxide (SO_2), would not be substantially emitted by the proposed project or project-generated traffic, and air quality standards for them are being met throughout the San Joaquin Valley Air Basin.

Existing Air Quality

The San Joaquin Valley experiences poor air quality conditions, due primarily to elevated levels of ozone and particulate matter.

Ozone (O_3)

In the upper atmosphere, O_3 serves a beneficial purpose by reducing ultraviolet radiation potentially harmful to humans. However, when it reaches elevated concentrations in the lower atmosphere, it can be harmful to the human respiratory system and to sensitive species of plants.

O_3 is formed in the atmosphere by a complex series of photochemical reactions that involve "ozone precursors" that comprise two families of pollutants: oxides of nitrogen (NO_x) and reactive organic gases (ROG). NO_x and ROG are emitted from a variety of stationary and mobile sources, primarily vehicle exhaust.

Ozone concentrations in the San Joaquin Valley are typically higher than in coastal areas because of the greater frequency of hot days and stagnant conditions that are conducive to ozone formation. Ozone precursor pollutants are also carried to the valley from upwind urban areas.

Nitrogen Dioxide (NO_2)

The major health effect from exposure to high levels of NO_2 is the risk of acute and chronic respiratory disease. Nitrogen dioxide is a combustion by-product, but it can also form in the atmosphere by chemical reaction. Nitrogen dioxide is a reddish-brown colored gas often observed during the same conditions that produce high levels of O_3 and can affect regional visibility. Nitrogen dioxide is one compound in a group of compounds consisting of oxides of nitrogen (NO_x). As described above, NO_x is an O_3 precursor compound.

Particulate Matter (PM)

Regulated fractions of particulate matter include PM_{10} which consists of particulate matter that is 10 microns or less in diameter, and $PM_{2.5}$ which consists of particulates that are 2.5 microns or less in diameter. Both PM_{10} and $PM_{2.5}$ can be inhaled and cause adverse health effects. $PM_{2.5}$ (including diesel exhaust particles) is thought to have greater effects on health because minute particles are able to penetrate to the deepest parts of the lungs.

Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as mining and demolition and construction activities, are more local in nature, while others, such as vehicular traffic, are more regional in their effect.

Carbon Monoxide (CO)

Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause dizziness and fatigue, and causes reduced lung capacity, impaired mental abilities and central nervous system function, and induces angina in persons with serious heart disease. Primary sources of CO in ambient air are exhaust emissions from on-road vehicles, such as passenger cars and light-duty trucks, and residential wood burning.

Toxic Air Contaminants

Besides the "criteria" air pollutants, there is another group of substances found in ambient air referred to as Toxic Air Contaminants (TACs). Particulate matter from diesel exhaust is the predominant TAC in

urban air and is estimated to represent about 70 percent of the cancer risk from TACs. The vast majority of diesel exhaust particles (over 90 percent) consist of $PM_{2.5}$, which are the particles that can be inhaled deep into the lung.

Air Quality Planning

At both the State and federal levels, air quality standards have been established for a range of air pollutants. These standards specify the concentrations of each criteria pollutant that the public may be exposed to without adverse health effects. Air quality monitoring data for each criteria air pollutant are used to determine if an air basin is in violation of an ambient air quality standard. Areas that do not violate federal and state ambient air quality standards are considered to have "attained" the standards. The San Joaquin Valley as a whole does not meet State or federal ambient air quality standards for ground level O_3 and the State standards for PM_{10} and $PM_{2.5}$. Accordingly, under the Federal Clean Air Act, the US EPA has classified the region as *extreme nonattainment* for the 8-hour O_3 standard and *nonattainment* for the 24-hour $PM_{2.5}$ standard. The US EPA classifies the region as *attainment* or *unclassified* for all other air pollutants, including carbon monoxide (CO). At the State level, the region is considered *severe non-attainment* for ground level O_3 and *non-attainment* for PM_{10} and $PM_{2.5}$, and is considered *attainment* or *unclassified* for all other pollutants.

In response to not meeting the air quality standards for ozone and PM, the San Joaquin Valley Air Pollution Control District (SJVAPCD) has prepared required attainment plans for each pollutant including the 2007 Ozone Plan and the 2012 $PM_{2.5}$ Plan. Both the ozone and $PM_{2.5}$ attainment plans include all measures (i.e., federal, state and local) that would be implemented through rule making or program funding to reduce air pollutant emissions.

SJVAPCD Rules and Regulations

In order to reduce emissions of ozone precursors (i.e., ROG and NO_x) and PM_{10} from new land use development projects, and achieve the attainment plans for each pollutant, the SJVAPCD adopted the Indirect Source Review Rule (ISR or Rule 9510) in 2005. The rule requires projects to reduce both construction and operational period emissions by specified amounts by applying the SJVAPCD-approved mitigation measures and/or paying fees to support off-site mitigation programs that reduce emissions. Fees apply to the unmitigated portion of the emissions and are based on estimated costs to reduce the emissions from other sources plus expected costs to cover administration of the program. Off-site emission reduction projects to be funded through ISR include retrofitting heavy-duty engines, replacing agricultural machinery and pumps, paving unpaved roads and road shoulders, trading out combustion-powered lawn and agricultural equipment with electrical and other equipment, as well as a number of other projects that result in quantifiable emissions reductions of PM_{10} and NO_X. In accordance with ISR, the project applicant will submit an application for approval of an Air Impact Assessment (AIA) to the SJVAPCD.

SJVAPCD controls PM_{10} from fugitive dust through several rules collectively known as Regulation VIII (Fugitive PM_{10} Prohibitions). The purpose of these rules is to reduce ambient concentrations of PM_{10} by requiring actions to prevent, reduce or mitigate anthropogenic (human caused) fugitive dust emissions. This applies to activities such as construction, bulk materials, open areas, paved and unpaved roads, material transport, and agricultural areas. Development projects are required to provide dust control plans that meet the regulation requirements. The Air District's required dust control measures are summarized in item 'b)' below. Other Air District rules that apply to construction activities include Rule 4102, regarding creation of a nuisance, Rule 4601 which limits volatile organic compound emissions

from architectural coatings, storage and cleanup, and Rule 4641 which limits emissions form asphalt paving materials.

Environmental Evaluation

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact. The Air District's guidance document (GAMAQI) does not include methodologies for assessing the effect of a project on consistency with clean air plans developed by the SJVAPCD. Regional clean air plans developed by SJVAPCD rely on local land use designations to develop population and travel projections that are the basis of future emissions inventories. Air pollution control plans are aimed at reducing these projected future emissions. The project land uses would not alter population and vehicle related emissions projections contained in regional clean air planning efforts in any measurable way, and would not conflict with achievement of the control plans aimed at reducing these projected emissions. Therefore, the project would not conflict with or obstruct implementation of efforts outlined in the region's air pollution control plans to attain or maintain ambient air quality standards. This would be a *less-than-significant* impact.

As discussed above, in 2005 the SJVAPCD adopted the Indirect Source Review (ISR) Rule in order to fulfill the District's emission reduction commitments in its PM_{10} and Ozone attainment plans. The District has determined that implementation and compliance with the ISR would reduce the cumulative PM_{10} and NO_X impacts of growth anticipated in the air quality plans to a less-than-significant level. As discussed under item 'b)' below, the project proponent will be required to file an application for ISR Review to confirm that the project will meet its emissions reduction requirements. The final emissions calculations for the project will be performed in an Air Impact Assessment (AIA), as required under ISR to determine the specific ISR reductions (i.e., in tons) that are to be achieved through on-site and/or off-site measures. . Upon its implementation of ISR emission reduction measures, the project would fulfill its share of achieving the District's emission reduction commitments in the PM_{10} and Ozone attainment plans. Therefore, the project would result in a *less-than-significant impact* since it would not conflict with or obstruct implementation of the applicable air quality plans.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. The SJVAPCD has developed criteria to determine if a development project could result in potentially significant regional emissions. According to Section 7.14 of the GAMAQI ("Result in a Cumulatively Considerable Net Increase of

Any Criteria Pollutant?"), any proposed project that would individually have a significant air quality impact (i.e., exceed significance thresholds for ROG or NO_x) would also be considered to have a significant cumulative air quality impact. The GAMAQI further states that "a Lead Agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including, but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located" (SJVAPCD 2015, p. 66). For local impacts of PM_{10} from unrelated construction projects, the GAMAQI recommends a qualitative approach where construction activities from unrelated projects in the area should be examined to determine if enhanced dust suppression measures are necessary.

Project-Specific Emissions

Project-related air quality impacts fall into two categories: short-term impacts due to construction, and long-term impacts due to the project operation. During construction, the project would affect local particulate concentrations primarily due to fugitive dust sources and would contribute to ozone and PM_{10}/$PM_{2.5}$ levels from exhaust emissions. Over the long-term, the project would result in an increase in emissions of ozone precursors such as ROG and NOx, primarily due to increased motor vehicle trips (employee trips, site deliveries, and on-site maintenance activities). The construction and operational emissions associated with the Aquamarine Solar Project and Gen-Tie Line are discussed below.

Construction Dust

Construction activities would generate particulate dust and other pollutants, which would temporarily affect local air quality in the surrounding area. Grading and site disturbance (e.g., vehicle travel on exposed areas) would likely result in the greatest emissions of dust and PM_{10}/$PM_{2.5}$. Windy conditions during construction could cause substantial emissions of PM_{10}/$PM_{2.5}$.

There are no residential receivers within 1.0 mile of the Aquamarine Solar Project site. The nearest residences consist of a series of five dispersed rural residences located along 22nd Avenue and Laurel Avenue at distances ranging from 1.3 to 1.8 miles east of the Aquamarine site. The next nearest residences consist of 20 single-family dwellings at the Shannon Ranch complex located at the southwest corner of Avenal Cutoff Road and Lincoln/Gale Avenue approximately 2.0 miles southwest of the project. There is one group of two ranch dwellings at the Stone Land Company Ranch on the south side of Nevada Avenue, approximately 1.4 miles east of Avenal Cutoff Road, where the facades of both dwellings are 180 feet from the southern edge of the gen-tie right-of-way.

To control dust emissions, the District emphasizes implementation of effective and comprehensive control measures. Regulation VIII essentially prohibits the emissions of visible dust (limited to 20-percent opacity) and requires that disturbed areas or soils be stabilized. Prior to construction, the applicant would be required to submit a Dust Control Plan that meets the regulation requirements. As specified in District Rule 8021, these plans are subject to the review and approval by SJVAPCD before any ground disturbing activity can begin.

The provisions of Regulation VIII and its constituent rules pertaining to construction activities generally require:

- Effective dust suppression (e.g., watering) for land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill and demolition activities.
- Effective stabilization of all disturbed areas of a construction site, including storage piles, not used for seven or more days.
- Control of fugitive dust from on-site unpaved roads and off-site unpaved access roads.
- Removal of accumulations of mud or dirt at the end of the workday or once every 24 hours from public paved roads, shoulders and access ways adjacent to the site.
- Cease outdoor construction activities that disturb soils during periods with high winds.
- Record keeping for each day dust control measures are implemented.
- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Landscape or replant vegetation in disturbed areas as quickly as possible.
- Prevent the tracking of dirt on public roadways. Limit access to the construction sites, so tracking of mud or dirt on to public roadways can be prevented. If necessary, use wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site.
- Suspend grading activity when winds (instantaneous gusts) exceed 25 mph or dust clouds cannot be prevented from extending beyond the site.

Anyone who prepares or implements a Dust Control Plan must attend a training course conducted by the Air District. Construction sites are subject to SJVAPCD inspections under this regulation. Compliance with Regulation VIII, including the effective implementation of a Dust Control Plan that has been reviewed and approved by the SJVAPCD, would reduce dust and PM_{10} emissions to a *less-than-significant* level.

Construction Exhaust Emissions

Equipment and vehicle trips associated with construction would emit ozone precursor air pollutants on a temporary basis. Construction equipment would also emit diesel particulate matter (DPM), which is a Toxic Air Contaminant (TAC), which can adversely affect local air quality. (See item 'c' below for a discussion of potential TAC impacts.)

Emissions of air pollutants that could affect regional air quality were addressed by modeling emissions and comparing them to the SJVAPCD significance thresholds. Construction period air pollutant emissions were modeled using the CalEEMod model. Unmitigated and mitigated emissions from all phases of construction are shown in Tables 6a and 6b on the following pages.

Construction build-out scenarios were developed based on the construction schedules, and anticipated construction vehicle and equipment use. Construction emissions were predicted for the construction of the Aquamarine Solar Generating Facility, and the Gen Tie Line, and use of helicopter(s) in threading the power lines during the Gen-Tie construction. The emissions computed using CalEEMod for this assessment address use of construction equipment, worker vehicle travel, on-site vehicle and truck use, and off-site truck travel by vendors or equipment/material deliveries. Both criteria air pollutant exhaust and fugitive dust (i.e., PM_{10} and $PM_{2.5}$) were computed by CalEEMod. Helicopter emissions were computed separately from CalEEMod. (Note that the

unmitigated CalEEMod modeling does not include the effects of SJVUAPCD Regulation VIII that would substantially reduce fugitive PM_{10} and $PM_{2.5}$ emissions.) The air quality calculations are included as attachments to the Air Quality Assessment, which is contained in Appendix B of this document. Attachment 1 includes the construction assumptions that were used to model emissions. Attachment 2 includes the CalEEMod modeling outputs for both uncontrolled and controlled emissions. Attachment 3 includes emissions associated with helicopter operations for line threading.

As shown in Table 6a, on the next page, the unmitigated construction emissions from the project would exceed the applicable Air District thresholds for NO_x and PM_{10} in 2019, and would exceed the NO_x threshold in 2020. Unless mitigated, this would represent a significant air quality impact.

TABLE 6A

CONSTRUCTION EMISSIONS IN TONS PER YEAR – UNMITIGATED

Year	Construction Phase	ROG	NO_x	CO	PM_{10}*	$PM_{2.5}$*
2019	Solar Generating Facility	1.37	11.64	8.93	4.27	1.82
	Gen-Tie – Kings County	0.94	9.21	6.19	15.43	2.31
	Gen-Tie – Helicopter Kings County	1.02	0.40	1.30	0.01	0.01
2019	Total 2019	3.33	**21.25**	16.42	**19.71**	4.14
2020	Solar Generating Facility	1.40	**11.80**	10.07	3.00	0.97
2021	Solar Generating Facility	0.04	0.29	0.29	0.09	0.03
Significance thresholds		10	10	100	15	-
Exceed threshold?		**No**	**YES**	**No**	**YES**	-

* Values reported for PM_{10} and $PM_{2.5}$ include fugitive dust emissions and diesel exhaust emissions combined. Fugitive dust emissions do not include the effect of measures implemented under Regulation VIII.
Source: Illingworth & Rodkin, 2018

The SJVAPCD Indirect Source Review Rule (Rule 9510) applies to construction emissions from the project. Regardless of whether a project's construction emissions of regional pollutants would exceed the Air District's CEQA significance thresholds for each pollutant or not, the project is still required to comply with Rule 9510, to ensure that the project contributes its fair share of emissions reductions in order to achieve the basin-wide reduction targets established in the Air District's Ozone and PM attainment plans. Rule 9510 requires that the project reduce construction exhaust emissions by 20 percent for NO_x and 45 percent for PM_{10} from calculated unmitigated levels.

SJVAPCD encourages reductions through on-site mitigation measures. (Note: The use of the term "mitigation" under Rule 9510 does not refer to mitigation of impacts under CEQA; i.e., the ISR emission reduction percentages are required without regard to whether the CEQA emissions thresholds are exceeded or not.) Fees to purchase or sponsor off-site reductions through SJVAPCD apply when on-site mitigation measures do not achieve the required percentage of emissions reduction. Using less-polluting construction equipment, such as newer equipment or retrofitting older equipment reduces construction emissions on-site. A combination of on-site and off-site measures can be implemented to meet the overall emission reduction requirements. The emissions reported in Table 6a do not include the reductions required by Rule 9510.

Mitigation Measure AQ-1*: All off-road diesel construction equipment greater than 25 horsepower and operating at the site for more than 20 hours shall meet U.S. EPA Tier 3 engine standards for emissions of nitrogen oxides and particulate matter. The effect of this mitigation measure was modeled using CalEEMod.*

Mitigation Measure AQ-2*: Develop a plan to use off-road diesel construction equipment that meets U.S. EPA Tier 4 engine standards for emissions of nitrogen oxides and particulate matter, to the extent feasible. This measure recognizes that specialized equipment may not be reasonably available for this project. This measure was not modeled using CalEEMod.*

Mitigation Measure AQ-3*: To ensure that project construction-related NOx emissions are adequately mitigated, the project proponent shall execute a Voluntary Emissions Reduction Agreement (VERA) with the SJVAPCD. The amount of NOx emissions to be mitigated through this agreement would be the uncontrolled emissions minus the emissions reduction attributable to Mitigation Measures AQ-1 and AQ-2. Prior to the issuance of building permits, the project proponent shall submit evidence to the County demonstrating that the project's construction-related emissions of NOx will be reduced to below the SJVAPCD's CEQA significance thresholds of 10 tons per year NOx.*

Effectiveness of Mitigation

Table 6b, on the next page, shows annual construction period emissions utilizing fugitive dust control measures (e.g., Regulation VIII), along with implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3. Control measures required by SJVAPCD were selected as mitigation measures in the CalEEMod model. In addition, mitigation measures for equipment usage were selected in CalEEMod that include use of Tier 3 or newer diesel construction equipment. SJVAPCD regulations that would apply to construction activities include Regulation VIII, regarding dust control, Rule 4102, regarding creation of a nuisance, Rule 4601 which limits volatile organic compound emissions from architectural coatings, storage and cleanup, and Rule 4641 which limits emissions form asphalt paving materials.

Based on CalEEMod modeling, implementation of Mitigation Measure AQ-1 could reduce NOx emissions by over 20 percent and PM_{10} exhaust emissions by over 40 percent. These would meet the ISR emissions reduction requirements. Use of Tier 4 equipment, under Mitigation Measure AQ-2, would further reduce NOx and PM_{10} exhaust emission from on-site construction equipment. A substantial portion of the emissions associated with construction would be emitted by haul trucks or vendors that travel both near and away from the project sites. These emissions would be

unaffected by the application of Mitigation Measures AQ-1 and AQ-2. Mitigation Measure AQ-3 would indirectly address these emissions.

TABLE 6B

CONTROLLED/MITIGATED CONSTRUCTION EMISSIONS IN TONS PER YEAR

Year	Construction Phase	ROG	NO_x	CO	PM_{10}*	$PM_{2.5}$*
2019	Solar Generating Facility	0.89	7.95	9.41	1.77	0.72
	Gen-Tie – Kings County	0.36	5.38	7.13	5.39	0.65
	Gen-Tie – Helicopter Kings County	1.02	0.40	1.30	0.01	0.01
2019	Total 2019	2.27	**13.73**	17.84	7.17	1.38
	ISR/VERA Reduction**	--	*3.73*	--	--	--
2020	Solar Generating Facility	1.16	**10.62**	10.05	1.76	0.61
	ISR/VERA Reduction**	--	*0.62*	--	--	--
2021	Solar Generating Facility	0.03	0.25	0.30	0.06	0.02
	ISR/VERA Reduction**	--	**--**	--	--	--
Significance thresholds		10	10	100	15	-
Exceed threshold?		**No**	**No**	**No**	**No**	-

* Values reported for PM_{10} and $PM_{2.5}$ include fugitive dust emissions and diesel exhaust emissions combined.
** Minimum amount of reduction required to meet the CEQA threshold. Additional reductions may be required to meet ISR requirements.

To implement a VERA as required under Mitigation Measure AQ-3, the project proponent and SJVAPCD will enter into a contractual agreement in which the project proponent agrees to mitigate project-specific emissions by providing off-site emissions reduction funds to the SJVAPCD. The SJVAPCD's role is to administer the implementation of the VERA consisting of identifying emissions reductions projects, funding those projects and verifying that emissions reductions have been successfully achieved. The types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of old farm tractors. The SJVAPCD has been successfully developing and implementing VERA contracts with project proponents since 2005. It is the SJVAPCD's experience that implementation of a VERA is a feasible mitigation measure, which effectively achieves the emission reductions by supplying real and contemporaneous emissions reductions measures (SJVAPCD 2015, pp. 116-117). Therefore, the implementation of the executed VERA would be considered by the SJVAPCD to reduce the project's air quality impacts to less-than-significant levels.

With implementation of required mitigation measures, construction period emissions of ROG, NO_x and PM_{10} would be below the thresholds used by SJVAPCD to judge the significance of construction air quality impacts under CEQA. Thus, while the residual construction-related emissions of ozone precursors and particulates may result in a small decrease in overall air quality, and may therefore have a small adverse health affect (as described earlier in this section under "Criteria Air Pollutants and Their Health Effects"), the overall health impact would be insignificant.

It was previously noted that under Rule 9510 (ISR), the project would be responsible for reducing construction PM_{10} emissions by 45 percent, and NOx emissions by 20 percent. These reductions are required regardless of whether the project emissions exceed the CEQA significance thresholds. This CEQA analysis does not account for ISR reductions, as they are treated separately by the SJVAPCD. The final emissions calculations for the project will be performed in an Air Impact Assessment (AIA), as required under ISR to determine the specific ISR reductions (i.e., in tons) as well additional reductions required under the VERA for any emissions that are not mitigated to below CEQA significance thresholds through ISR reduction.

Project Operation

The operation of the Aquamarine Solar Project would result in emissions of regional air pollutants, primarily from project-generated traffic and maintenance equipment. The CalEEMod model was also used to predict annual emissions from operation of the Aquamarine Solar Project. (Note: Once completed, the Gen-Tie Line would involve very low levels of activity for annual inspections and maintenance. As such, the operational emissions associated with Gen-Tie operation would be negligible and thus were not estimated.) Since 2022 is the first full year that the Aquamarine project could be operational, that year was used as the analysis year. Maintenance vehicle and some off-road equipment usage would occur on-site as well as workers traveling and occasional equipment or vendor deliveries would result in some emissions. The annual emissions from project operation are shown in Table 7.

TABLE 7

ANNUAL PROJECT OPERATIONAL EMISSIONS IN TONS PER YEAR

Phase	ROG	NO_x	PM_{10}[1]	$PM_{2.5}$[1]
Project Operations	0.12	1.24	8.6	0.9
Significance Threshold[2]	10	10	15	15
Exceeds Threshold?	**No**	**No**	**No**	**No**

[1] Includes both exhaust and fugitive dust emissions.
[2] SJVAPCD significance thresholds for operational emissions http://www.valleyair.org/transportation/0714-GAMAQI-Criteria-Pollutant-Thresholds-of-Significance.pdf .

As shown in Table 7, the annual emissions from the project operation would not exceed the applicable Air District thresholds for ROG, NO_x, PM_{10}, or $PM_{2.5}$. Therefore, the air quality impact of project operation, in terms of regional pollutants, would be *less than significant* under CEQA.

As discussed above under 'Construction Exhaust Emissions', the project is subject to SJVAPCD's Indirect Source Review or Rule 9510 (ISR) to reduce NO_x and PM_{10} emissions. Although the project's operational emissions of regional pollutants would not exceed the Air District's CEQA significance thresholds for each pollutant, as shown in Table 7, the project is still required to comply with Rule 9510, to ensure that the project contributes its fair share of emissions reductions in order to achieve the basin-wide reduction targets established in the Air District's Ozone and PM attainment plans. Under Rule 9510, the project would be required to reduce operational NO_x emissions by 33.3 percent and operational PM_{10} emissions by 50 percent over 10 years. Due to the nature of the project as an unstaffed facility in a rural location, it is not feasible to implement on-site reduction measures such as incentives for ridesharing or carpooling, or increasing transit access, or land use measures such as increased density near transit stops. Therefore, off-site mitigation fees will be paid by the applicant to achieve the required reductions under Rule 9510. These operational fees will be used to fund Air District air pollution reduction programs elsewhere and would fully mitigate the operational emissions under Rule 9510

In summary, the operational emissions of ROG, NOx, PM_{10} and $PM_{2.5}$ would be below the significance thresholds applied by SJVAPCD to determine the significance of operational air quality impacts under CEQA. Thus the project's air quality impact from operational emissions would be *less than significant*.

Project Decommissioning

The Aquamarine solar facility would be decommissioned at the end of its productive life after 25 to 30 years of operation. The activities associated with deconstruction would be comparable to construction, but emissions are expected to be substantially lower given anticipated reductions in vehicle and equipment emissions that will be phased-in over time per State and federal regulations, and also because of the generally lower intensity of equipment use associated with decommissioning. At the time of decommissioning of the solar facility, emission levels for NOx and ROG are expected to be about 25 percent of construction emissions, and PM_{10} and $PM_{2.5}$ (as exhaust) would be about 45 percent and 23 percent of construction emissions, respectively. Thus emissions during decommissioning are not expected to exceed SJVAPCD significance thresholds for any criteria pollutants. With the application of Regulation VIII dust control requirements, fugitive PM_{10} emissions are likewise expected to be below the applicable significance thresholds, as they are for construction. Therefore, the emissions associated with project decommissioning would be *less than significant*.

Cumulative Emissions

Regional Air Pollutant Emissions

As discussed, cumulative ozone impacts would be considered significant if the project-specific emissions exceed the SJVAPCD significance thresholds for ozone precursors ROG or NO_X, or the project is not consistent with the regional clean air plan. As discussed in Item "(b) (and shown in Table 6b) above, project-specific construction emissions of ozone precursor pollutants (ROG and NO_x) and PM were found to be less-than-significant after mitigation. As discussed in item 'b)' (and shown in Table 6a) above, project-specific operational emissions of ozone precursor pollutants (ROG and NO_X) and PM_{10} were found to be less-than-significant without mitigation. As discussed in item 'a)' above, the project would fulfill its share of achieving the Air District's emission reduction

commitments in the PM_{10} and Ozone attainment plans through its obligation to implement ISR emission reduction measures under Air District Rule 9510. Therefore, the project would fully comply with the applicable air quality plans and would not conflict with or obstruct their implementation. Therefore, the project contribution to cumulative regional air quality impacts would be *less than significant*.

Local Air Pollutant Emissions

Construction period PM_{10} emissions would be localized. With implementation of SJVAPCD Regulation VIII, construction period impacts would be less than significant. Additional construction that may occur in the area concurrently with the project would be subject to SJVAPCD Regulation VIII, as well as the District's Indirect Source Review Rule 9510, which would reduce cumulative construction emissions to less-than-significant levels. In summary, the cumulative project impacts to localized air quality impacts from criteria pollutants for which the region is in non-attainment would be *less-than-significant*.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact. Land uses that are considered sensitive to localized increases in emissions of air pollutants include hospitals, care facilities, schools, parks, and residential areas. The nearest sensitive receptors to the Aquamarine project site include: 1) existing residences at the Shannon Ranch, located 2.0 miles southwest at Avenal Cutoff Road and Lincoln/Gale Avenue; 2) a series of 5 rural residences located along and near 22nd Avenue approximately 1.3 to 1.8 miles east of the site; 3) base housing at Lemoore Naval Air Station located 3.2 miles north of the project site. The only residences near the Gen-Tie Line are 2 dwellings at the Stone Land Company Ranch on the south side of Nevada Avenue east of Avenal Cutoff Road.

The two main types of pollutants that can occur in high localized concentrations are carbon monoxide from vehicular emissions and Toxic Air Contaminants (TACs) from diesel exhaust. Other pollutants, such as lead (Pb) and sulfur dioxide (SO_2) would not be substantially emitted by the project, and air quality standards for them are being met throughout the San Joaquin Valley Air Basin. The potential for the project to result in substantial concentrations of CO or TACs is discussed below.

Carbon Monoxide

Aquamarine Solar Project and Gen-Tie Line

Project traffic would slightly increase concentrations of carbon monoxide along roadways providing access to the project. Since the major source of carbon monoxide (CO) is automobile traffic, elevated concentrations of CO occur near areas of high traffic volume and congestion. Emissions and ambient concentrations of CO have decreased greatly in recent years. These improvements are due largely to the introduction of cleaner burning motor vehicles and reformulated motor vehicle fuels. No exceedances of the State or federal CO standards have been recorded at any of San Joaquin Valley's monitoring stations in the past 15 years. The San Joaquin Valley Air Basin has attained the State and National CO standards.

In order to determine where a project has the potential to result in a violation of a CO standard, the SJVAPCD applies the following screening criteria: 1) the level of service (LOS) on one or more streets or intersections would be reduced to LOS E of F by the project, and; 2) the project would substantially worsen the LOS at a street or intersection in the vicinity operating at LOS F under pre-project conditions. As discussed in section *4.17 Transportation*, all roadway segments that would be affected by project traffic operate at LOS B or C under pre-project conditions, and the construction of the Aquamarine Solar Project and Gen-Tie Line will not result in a degradation of these service levels. Since neither of the SJVAPCD screening criteria would thus be met, the Aquamarine Solar Project and Gen-Tie Line would not result in a violation of the CO standard and therefore would result in a *less-than-significant impact* in terms of exposing sensitive receptors to substantial concentrations of carbon monoxide.

Toxic Air Contaminants

The Toxic Air Contaminant (TAC) that is relevant to the Aquamarine Solar Project and Gen-Tie Line is Diesel Particulate Matter (DPM), which would be emitted by diesel-fueled equipment and vehicles during construction, and by diesel-fueled vehicles used during project operations including worker vehicles, delivery trucks, and maintenance vehicles.

Aquamarine Solar Project

For the Aquamarine project, the highest daily levels of DPM would be emitted during construction activities from use of heavy-duty diesel equipment such as bulldozers, excavators, loaders, graders and diesel-fueled haul trucks. However, these emissions would be intermittent, vary throughout the project site area, and be of a temporary duration (approximately 2 years of total construction activity). During project operations, low-level DPM emissions would result from worker vehicles and maintenance activities, but they would be constant over the lifetime of the project. Operational DPM emissions would mainly result from the use of pickup trucks with a portable water trailer (and pump) which would be used for panel cleaning.

Levels of DPM emissions can be generally inferred from PM_{10} emissions, of which diesel exhaust constitutes a substantial component. Tables 6a and 6b, above, show that PM_{10} emissions from solar project construction would be well below the applicable significance threshold. Table 7, above, shows that PM_{10} emissions from operational activities are also well below the significance threshold.

Because of the relatively small levels of DPM emissions during project construction and operation, and due to the substantial distances to the nearest sensitive receptors (e.g., the nearest residence is at least 1.3 miles from the nearest project boundary), DPM emissions from project construction would disperse to negligible levels at the nearest receptor locations, and thus the health impacts associated with exposure to DPM from project construction and operation are not anticipated to be significant. Therefore, the Aquamarine Solar Project would result in a *less-than-significant impact* in terms of exposing sensitive receptors to substantial concentrations of Toxic Air Contaminants.

Gen-Tie Line

There are 2 sensitive receptors (residences) at the Stone Land Company Ranch located approximately 180 feet from the gen-tie corridor across Nevada Avenue. It is anticipated that nearest transmission towers would be located approximately 300 feet from the nearest dwelling at

the Stone Land Company Ranch. Construction of the gen-tie towers would proceed quickly. The total time required at each tower site for clearing, grading, excavation of footings, and tower assembly and erection, and clean up, would be 1 to 2 weeks. The area subject to temporary grading at each tower site would be approximately one acre, so the duration of grading equipment operation would be brief. Similarly, the time required for auguring holes for the concrete footings at each tower site would also be short.

The maximally exposed sensitive receptor along Nevada would be 300 feet or more away from the nearest tower site. However, even under worst-case conditions with the nearest tower placed in proximity to the maximally exposed receptor, the total duration of nearby construction could be up to two weeks, but likely much shorter, with total operating time for diesel equipment shorter still. Construction of other towers and access driveways in the vicinity would occur at least 800 feet away and farther. At this distance, most diesel particulates would be dispersed and the concentrations reaching the receptor locations would be low.

Operational emissions would be negligible given the very low frequency of inspection and maintenance activities that would take place at the nearest tower. The very low level of exhaust emissions associated with construction of the Gen-Tie Line is indicated by the low levels of PM_{10}/$PM_{2.5}$ estimated for Gen-Tie construction.

Given the very brief duration of construction that would occur at the nearest residential receptor, and considering the negligible operational emissions, and the lifetime exposure period considered in evaluating cancer risk, it is expected that the increased cancer risk at the maximally exposed receptor would be very low and would be well below the risk threshold of 20 in 1 million. Therefore, the overall health risk due to emissions of diesel particulate matter from construction of the Gen-Tie Line would be *less than significant*.

Cumulative Toxic Air Pollutant Impacts

Aquamarine Solar Project

With respect to cumulative emissions of Toxic Air Contaminants (TACs), it is important to note again that DPM concentrations diminish rapidly from the source. Pollutant dispersion studies have shown that there is about an 80 percent drop off in DPM concentrations at approximately 1,000 feet from the source (CARB 2005). Thus multiple sources of DPM emissions must all be proximate to a receptor to have an additive effect to DPM concentrations at the receptor site. Since the nearest sensitive receptors to the Aquamarine Solar Project are at least 1.3 miles from the nearest site boundary, most if not all DPM emissions from the project would disperse into the atmosphere before reaching the nearest sensitive receptor locations.

While the SJVAPCD does not have specific significance criteria for assessing cumulative health risks, the SJVAPCD significance criterion of an increase in cancer risk of more than 20 in a million persons from an individual facility or project over a 70-year lifetime for the maximally exposed individual can be used as a conservative measure of cumulative significance (SJVAPCD 2014b). This significance criterion is applied to individual projects where there is a potential for a significant health impact to nearby sensitive receptors. The use of this same threshold for cumulative TAC impacts is stringent compared to thresholds being considered elsewhere. For example, in preparing the updated draft

CEQA Guidelines for the Bay Area Air Quality Management District, the BAAQMD presented substantial evidence in support of a cumulative TAC significance criterion of an increased cancer risk of more than 100 persons per million persons (BAAQMD 2009). This threshold applies to projects that are located within 1,000 feet of the proposed project. (The effects of projects outside this distance are only considered by lead agencies if they are large enough to have unique effects (e.g., ports or refineries)(I&R 2018)). To illustrate the 20 in 1 million criterion, the TAC impact associated with the construction of a 1 million square-foot commercial development (e.g., a large regional shopping center) would fall to well below the significance threshold (i.e., cancer risk would be less than 10 cases per million) at a distance of 300 feet from the project site (BAAQMD 2010).

Applying the 1,000-foot criterion to define the geographic scope of the cumulative TAC analysis, there are four solar projects within this distance from the Aquamarine site (i.e., Westside Phase 2, Mustang Two, Slate, and Solar Blue). The combined construction intensity (i.e., number of diesel emitting vehicles and equipment in operation) from these five solar PV projects (including Aquamarine) would be less than that of a regional shopping center. In addition, the nearest receptors that would be potentially subject to cumulative DPM emissions would be 1.3 miles from the Aquamarine Solar Project site, and at least 1.0 miles from the nearest of the five cumulative projects. These distances are at least 18 times farther than the 300-foot that TAC concentrations in the shopping center example would fall to well below the significance threshold. It should also be considered that DPM would be emitted from solar projects only during their relatively brief construction periods (i.e., up to 3 years depending on project size), which is far less than the 70-year exposure time considered in health risk assessments for comparison to the significance threshold. Thus, it is not expected the cumulative effects would result in an increased cancer risk above 20 in one million at the nearest sensitive receptor common to the cumulative approved and pending solar projects in the vicinity if the Aquamarine project. Therefore, the project contribution to the cumulative health risk impact would not be significant, and the cumulative health risk impact associated with the Aquamarine Solar Project would be *less-than considerable*.

Gen-Tie Line

There is one solar project that would be constructed in proximity to the Gen-Tie Line. The southern portion of the Daylight Legacy Solar Project could be under construction at the same time as the adjacent segment of the Gen-Tie Line. The only sensitive receptors in the vicinity are the two dwellings located at the Stone Land Company Ranch, which is located 2.5 miles west of the nearest point at which diesel exhaust would be generated by both the Gen-Tie project and the Daylight Legacy project. As discussed above, the Gen-Tie construction activity would progress relatively quickly from one monopole site to the next, so the duration of TAC emissions at any given location would be no more than two weeks. Similarly, heavy equipment activity at the southern end of the Daylight Legacy project would also be short in duration. Considering that TAC concentrations would be all but fully dissipated at a distance of 2.5 miles to the nearest sensitive receptors, and given the very brief exposure periods at the sensitive receptor locations, there is no potential that cumulative health risk would exceed the significance threshold of 20 addition cancer cases in one million. Therefore, and the cumulative health risk impact associated with Gen-Tie construction would be *less-than significant*, and the project contribution would *not be cumulatively considerable.*

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact. During construction, the various diesel powered vehicles and equipment in use on the Aquamarine project site and Gen-Tie corridor would create localized odors. These odors would be temporary and would dissipate relatively quickly and thus would not likely be noticeable for extended periods of time beyond the project boundaries. For the Aquamarine project, most if not all diesel odors carried off-site would disperse into the atmosphere before reaching the nearest sensitive receptors located at least 1.3 miles away. For the Gen-Tie Line, construction occurring in proximity to the Stone Land Company Ranch could result in noticeable odors at the two residences in that ranch complex; however, the generation of diesel odors at that location would be relatively brief and would largely dissipate before reaching the affected residences. Therefore, the potential impacts due to odors would be less than significant. There are no other emissions sources associated with the Aquamarine Solar Project and Gen-Tie Line. Other than emissions discussed under previous items in this section, the Aquamarine Solar Project and Gen-Tie Line would not result in other emissions, including emissions leading to odors, adversely affecting a substantial number of people; therefore, the impact would be *less than significant*.

REFERENCES – AIR QUALITY

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SJVAPCD 2014a — San Joaquin Valley Air Pollution Control District (SJVAPCD). 2014. *Air Quality Thresholds of Significance – Criteria Pollutants*. July. http://www.valleyair.org/transportation/0714-GAMAQI-Criteria-Pollutant-Thresholds-of-Significance.pdf

SJVAPCD 2014b San Joaquin Valley Air Pollution Control District (SJVAPCD). 2014. *Air Quality Thresholds of Significance – Toxic Air Contaminants*. July. http://www.valleyair.org/transportation/0714-GAMAQI-TACs-Thresholds-of-Significance.pdf

SJVAPCD 2014c San Joaquin Valley Air Pollution Control District (SJVAPCD). 2014. *Draft Guidance for Assessing and Mitigating Air Quality Impacts*. July. http://www.valleyair.org/transportation/0714-GAMAQI-Criteria-Pollutant-Thresholds-of-Significance.pdf

SJVAPCD 2015 San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. *Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI)*. March. http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf

4.4 BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) 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 Game or U.S. Fish and Wildlife Service?	☐	■	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	■
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	■
d) 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 native wildlife nursery sites?	☐	☐	■	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	■
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

This section summarizes the analysis and conclusions of the biological assessment report prepared by Live Oak Associates (LOA) in May 2019. The LOA report is contained in Appendix C of this document.

Biological Setting

Biotic Habitats/Land Uses

Aquamarine Solar Project Site

The entire 1,825-acre Aquamarine project site consists of agricultural fields. The site is currently cultivated for winter wheat during the wet season and is typically left fallow during the dry season. There is an existing on-site agricultural well near the western boundary of the project site. The 70-kV Henrietta to Tulare Lake sub-transmission line runs in a north-south direction through the center of the site along the 25th Avenue alignment. Two large agricultural canals run through the center of the site. One canal runs in a north-south direction along the east side of the 25th Avenue alignment, and the other canal runs in an east-west direction along the south side of Laurel Avenue. Also, a large

agricultural drainage ditch runs along Avenal Cutoff Road on the northwest frontage of the project side. Smaller irrigation canals and ditches are present in the eastern half of the site.

Regular agricultural activities on the site create unsuitable habitat for most native amphibian, reptile, bird, and mammal species. Nonetheless, a number of animal species are expected to use the disked field, especially in times where disking is not recent. Pacific chorus frogs and western toads may use the adjacent irrigation canal to the east for breeding and may also disperse through the adjacent fields during the winter and spring or when the fields are not regularly disced. Reptile species that may forage in this habitat include lizards such as the side-blotched lizard and western whiptail, and snakes such as the gopher snake, common kingsnake, coachwhip, and glossy snake.

Resident bird species expected to use this habitat are common species throughout the region and would include such species as Brewer's blackbirds, brown-headed cowbirds, and European starlings. Wintering birds that may utilize the disced fallow field are also common species throughout the region and would include such species as savannah sparrow, American pipit, and Say's phoebe. Summer migrants such as the barn swallow may forage on the site.

Burrowing rodent activity in the field is expected to be minimal due to the ground disturbance regime. Botta's pocket gopher burrows may occur within the site, and California ground squirrel burrows may occur along the perimeters of agricultural fields.

The Aquamarine site offers limited foraging opportunities for mammalian and avian predators. Raptors such as red-tailed hawks, Swainson's hawks, great horned owls, burrowing owls, and barn owls may occasionally forage on the site, and disturbance-tolerant mammalian predators such as raccoons, striped skunks, coyotes, and red foxes may occasionally forage on or pass through the site.

Gen-Tie Corridor

The Gen-Tie Corridor within Kings County consists of agricultural lands similar to those of the Aquamarine site; however, the Gen-Tie corridor includes fallow/pasture land, orchards, and row crops with a few dispersed agricultural residences and farm buildings. Much of the Gen-Tie corridor supports roadside ditches and irrigation basins, all of which will be avoided by Gen-Tie construction. The Gen-Tie corridor would be expected to support the same species as the Aquamarine site except for an increase in potential for nesting raptors, since trees exist along the corridor, unlike the Aquamarine site.

Special Status Plants and Animals

Several species of plants and animals within the state of California have low populations and/or limited distributions. Such species may be considered "rare" and are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to agricultural and urban uses. State and federal laws have provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. (See LOA's biological report in Appendix C for a full description of applicable laws and regulations.) A sizable number of native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened, or endangered. Collectively, these plants and animals are referred to as "special status species."

A number of special-status species occur in the project vicinity. The LOA biological report lists a total of 3 plant species and 36 animal species with potential to occur in the project area. All three of the listed plant species (California jewel-flower, San Joaquin woollythreads, and round-leaved filaree) are considered to be absent from the project site. Twenty-one animal species are either absent or are considered unlikely to occur on the Aquamarine site or Gen-Tie corridor. These include: vernal pool fairy shrimp, valley elderberry longhorn beetle, California tiger salamander, western spadefoot, western pond turtle, Temblor legless lizard, coast horned lizard, blunt-nosed leopard lizard, giant garter snake, California glossy snake, San Joaquin whipsnake, American white pelican (nesting), black swift, Vaux's swift, western yellow-billed cuckoo, Nelson's antelope squirrel, giant kangaroo rat, Fresno kangaroo rat, Tipton kangaroo rat, Tulare grasshopper mouse, and ringtail.

An additional 15 animal species may regularly or occasionally utilize the Aquamarine site and Gen-Tie corridor for foraging, including the western snowy plover, mountain plover, white-faced ibis, Swainson's hawk, northern harrier, white-tailed kite, western burrowing owl, long-eared owl, loggerhead shrike, tricolored blackbird, Townsend's big-eared bat, pallid bat, California mastiff bat, American badger, and San Joaquin kit fox. The Project Site does not provide regionally important foraging habitat for these species. Migrant species such as the mountain plover pass through or over many types of habitats en route to breeding or wintering habitat. White-faced ibis may possibly forage in agricultural fields of the project vicinity from time to time.

TABLE 8
SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

PLANTS ***Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Acts***			
Common and scientific names	**Status**	**General habitat description**	***Occurrence in the Project Site**
California jewelflower (*Caulanthus californicus*)	FE, CE, CRPR 1B.1	Habitat: Chenopod scrub, valley and foothill grassland, pinyon-juniper woodland. Elevation: 61-1000 meters. Blooms: February–May.	**Absent.** Suitable habitat for this species is absent from the Aquamarine site and Gen-Tie corridor. Any suitable habitat that may have once been present has been highly modified for human use.
Kern mallow (*Eremalche parryi* ssp. *kernensis*)	FE, CRPR 1B.2	Habitat: On dry, open sandy to clay soils; often at edge of balds in Chenopod scrub, Pinyon and juniper woodland, Valley and foothill grassland. Elevation: 70 – 1290 meters. Blooms: January - May.	**Absent.** Suitable habitat for this species is absent from the Aquamarine site and Gen-Tie corridor. Any suitable habitat that may have once been present has been highly modified for human use.
San Joaquin woolythreads *(Monolopia congdonii)*	FE CRPR 1B.2	Habitat: Chenopod scrub, valley and foothill grassland. Elevation: 60-800 meters. Blooms: February-May.	**Absent.** Suitable habitat for this species is absent from the Aquamarine site and Gen-Tie corridor. Any suitable habitat that may have once been present has been highly modified for human use.

TABLE 8 (CONT'D)
SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS ***Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Acts***			
Common and scientific names	**Status**	**General habitat description**	*** Occurrence in the Project Site**
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	Occurs in vernal pools of California.	**Absent.** Suitable habitat in the form of vernal pools is absent from the Aquamarine site and Gen-Tie corridor.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	Lives in mature elderberry shrubs of California's Central Valley and Sierra Foothills.	**Absent.** Suitable habitat in the form of elderberry shrubs is absent from the Aquamarine site and Gen-Tie corridor.
California tiger salamander *(Ambystoma californiense)*	FT, CT	Breeds in vernal pools and stock ponds of central California; adults aestivate in grassland habitats adjacent to the breeding sites.	**Absent**. No historic or current records of this species are known within the region. Intensively cultivated lands provide unsuitable habitat for this species.
Giant garter snake *(Thamnophis gigas)*	FT, CT	Habitat requirements consist of (1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter.	**Unlikely**. Marginal breeding and overwintering habitat is available along the irrigation canals at the Aquamarine site. However, the nearest recorded observation is more than 3 miles from the site (CNDDB 2018).
Blunt-nosed leopard lizard (*Gambelia sila*)	FE, CE, CP	Frequents grasslands, alkali meadows and chenopod scrub of the San Joaquin Valley from Merced south to Kern County.	**Absent.** Habitats required by this species are absent from the Aquamarine site and Gen-Tie corridor and vicinity.
Swainson's hawk (nesting) *(Buteo swainsoni)*	CT	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Present.** Foraging habitat is available throughout the project area. Breeding habitat is absent from Aquamarine site and Gen-Tie corridor and within a half-mile. Swainson's hawks were observed flying over the Aquamarine site during the April 10, 2018 site visit; they are known to occur over and adjacent to the Aquamarine site, per previous surveys conducted by LOA as well. See detailed discussion of Swainson's hawk in the main text of this section.

TABLE 8 (CONT'D)
SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS ***Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Acts***			
Common and scientific names	**Status**	**General habitat description**	*** Occurrence in the Project Site**
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FC, CE	Breed in large blocks of riparian habitats, particularly cottonwoods and willows.	**Absent**. Dense riparian habitat required by this species is absent from the Aquamarine site and Gen-Tie corridor.
Western snowy plover (*Charadrius alexandrines nivosus*)	FT, CSC	Uses man-made agricultural wastewater ponds and reservoir margins. Breeds on barren to sparsely vegetated ground at alkaline or saline lakes, reservoirs, ponds, and riverine sand bar.	**Possible.** Breeding and foraging habitat is available along agricultural canals within the Aquamarine site, and along the irrigation basins and ditches of the Gen-Tie route, and along the banks of the California Aqueduct.
Tricolored Blackbird (*Agelaius tricolor*)	CSC	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in grassland and cropland habitats.	**Possible.** Foraging habitat for this species is present within the Aquamarine site in the form of cattails in the canals to the east of the site; however, presence of breeding habitat on the site itself would depend on the type of crop planted from season to season. The Aquamarine site has typically been cultivated for winter wheat in the wet season and left fallow during the dry season. Tricolored blackbirds are known to nest in wheat fields. Habitat is less suitable along the Gen-Tie route and California Aqueduct, due to lack of suitable vegetation.
Nelson's antelope squirrel *(Ammospermophilus nelsoni)*	CT	Frequents open shrublands and annual grassland habitats.	**Absent**. Habitats required by this species are absent from the Aquamarine site, Gen-Tie corridor and surrounding agricultural lands due to intensive agricultural use.
Giant kangaroo rat *(Dipodomys ingens)*	FE, CE	Inhabits grasslands on gentle slopes generally less than 10°, with friable, sandy-loam soils.	**Absent**. Habitats required by this species are absent from the Aquamarine site, Gen-Tie corridor, and surrounding agricultural lands due to intensive agricultural use.
Fresno kangaroo rat **(***Dipodomys nitratoides exilis***)**	FE, CE	Inhabits grassland on gentle slopes generally less than 10°, with friable, sandy-loam soils.	**Absent.** Habitats required by this species are absent from the Aquamarine site, Gen-Tie corridor, and surrounding agricultural lands due to intensive agricultural use.
Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*)	FE, CE	Inhabits arid land with grassland or salt scrub on level or near-level terrain on the San Joaquin Valley floor with alluvial fan and floodplain soils.	**Absent.** Habitats required by this species are absent from the Aquamarine site, Gen-Tie corridor, and vicinity.

TABLE 8 (CONT'D)
SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS ***Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Acts***			
Common and scientific names	**Status**	**General habitat description**	*** Occurrence in the Project Site**
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE, CT	Frequents desert alkali scrub and annual grasslands and may forage in adjacent agricultural habitats. Utilizes enlarged (4 to 10 inches in diameter) ground squirrel burrows as denning habitat.	**Possible.** Some burrows observed in the surrounding area were of suitable size for the kit fox. However, nearly all these burrows were within the vicinity of California ground squirrels or actively used by ground squirrels. The Aquamarine site, the Gen-Tie corridor, and the surrounding area have been highly modified for agricultural use and, as a result, provide only marginal foraging and breeding habitat for the kit fox. There are no documented sightings of this species on the Aquamarine Site, the Gen-Tie corridor, or in the surrounding area, but there have been numerous documented sightings within a ten-mile radius of the Aquamarine site and Gen-Tie between 1975 and 2002 (CNDDB 2018). Therefore, kit foxes are unlikely to breed within the Aquamarine site or Gen-Tie corridor, but may occasionally forage within the Aquamarine site, and may use the Aquamarine site and Gen-Tie corridor for dispersal movements.
ANIMALS ***State Species of Special Concern (adapted from CDFW 2016 and USFWS 2016)***			
Common and scientific names	**Status**	**General habitat description**	*** Occurrence in the Project Site**
Western spadefoot (*Spea hammondii*) (*Scaphiopus hammondii*)	CSC	Primarily occurs in grasslands, but also occurs in valley and foothill hardwood woodlands. Requires vernal pools or other temporary wetlands for breeding.	**Absent.** Vernal pools required for breeding are absent from the Aquamarine site and Gen-Tie corridor. Terrestrial habitat required for aestivation is absent from cultivated field.
Western pond turtle **(***Actinemys marmorata***)**	CSC	Intermittent and permanent waterways including streams, marshes, rivers, ponds and lakes. Open slow-moving water of rivers and creeks of central California with rocks and logs for basking.	**Unlikely.** While marginal habitat, in the form of the canals, exists within the Aquamarine site, estivation and breeding habitat is absent from the site. The Gen-tie route supports a few irrigation basins; however, these basins lack appropriate upland habitat. Therefore, it would be unlikely to for western pond turtles to occur along the Gen-Tie route.

TABLE 8 (CONT'D)
SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS ***State Species of Special Concern (adapted from CDFW 2016 and USFWS 2016)***			
Common and scientific names	**Status**	**General habitat description**	*** Occurrence in the Project Site**
Temblor legless lizard *(Anniella alexanderae)*	CSC	The Temblor legless lizard (previously called silvery legless lizard) occurs mostly underground in warm moist areas with loose soil and substrate and is known only from two sites west of Highway 33 at the base of the Temblor Range between McKittrick and Taft in Kern County.	**Absent**. The project area is outside this species' range.
Coast horned lizard (*Phrynosoma blainvillii*)	CSC	Grasslands, scrublands, oak woodlands, etc. of central California. Common in sandy washes with scattered shrubs.	**Absent.** Habitats required by this species are absent because they have been heavily modified for human use. The nearest documented observation of this species is more than 27 miles to the northwest of the Aquamarine site and Gen-Tie corridor (CNDDB 2018).
California glossy snake (*Arizona elegans occidentallis*)	CSC	Occurs in arid areas with grassland, scrub, chaparral, and rocky washes. This species is nocturnal and spends the day in burrows.	**Absent.** Habitats required by this species are absent from the Project Site, the Gen-Tie corridor, and vicinity.
San Joaquin whipsnake (*Masticophis flagellum ruddocki*)	CSC	Open, dry habitats with little or no tree cover. Found in valley grasslands and saltbush scrub in the San Joaquin Valley.	**Absent.** Habitats required by this species are absent from the Aquamarine site, the Gen-Tie corridor, and vicinity.
American white pelican (nesting) *(Pelecanus erythrorhynchos)*	CSC	Nests on islands in large lakes or on ephemeral islands in shallower wetlands.	**Unlikely**. Nesting habitat is absent from the Aquamarine site and the Gen-Tie corridor. This species has observed flying over the general area in previous years; however, the species is unlikely to stop and nest within the Aquamarine site or the Gen-Tie corridor.
White-faced ibis **(***Plegadis chihi***)**	CSC	Salt and freshwater marsh as well as grain and alfalfa fields.	**Possible.** Marginal foraging habitat required for this species is present in the form of the agricultural fields within the Aquamarine site and the Gen-Tie corridor. Breeding habitat is absent.

TABLE 8 (CONT'D)
SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS ***State Species of Special Concern (adapted from CDFW 2016 and USFWS 2016)***			
Common and scientific names	**Status**	**General habitat description**	*** Occurrence in the Project Site**
Northern harrier (*Circus cyaneus*)	CSC	Frequents meadows, grasslands, open rangelands, freshwater emergent wetlands; uncommon in wooded habitats.	**Possible.** Harriers were observed foraging over agricultural fields within the general area during previous surveys, and foraging habitat exists on the Aquamarine site and the Gen-Tie corridor. However, breeding habitat is absent.
White-tailed kite (*Elanus leucurus*)	CP	Open grasslands and agricultural areas throughout central California.	**Possible.** Suitable foraging habitat occurs for this species within the Aquamarine site and the Gen-Tie corridor; however, breeding habitat is absent.
Mountain plover (*Charadrius montanus*)	CSC	Forages in short grasslands and freshly plowed fields of the Central Valley.	**Possible.** The Aquamarine site and the Gen-Tie corridor provide potential winter foraging habitat for this species; however, the species does not breed in this region.
Burrowing owl (*Athene cunicularia*)	CSC	Frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	**Present.** The site visit in November of 2016 identified a burrowing owl on the Aquamarine site in a white 18" pipe that goes under a farm road in the northwest portion of the Aquamarine site. Based on the number of pellets and whitewash, the owl had been using this location for quite some time prior to the site visit. In addition, multiple burrowing owls were observed within the Aquamarine site along dry agricultural canals and dry banks of larger wet canals, including the canal along the south side of Laurel Avenue. As a side note, maintenance activities along these canals can temporarily displace burrowing owls until ground squirrels recolonize the canal banks. During the November 2016 site visit, the banks of the canal south of Laurel Avenue had recently been managed; however, it had been recolonized by the time of the 2018 site visits. As burrowing owls are known to be in the area, it is possible they may occur along portions of the Gen-Tie route and the California Aqueduct.

TABLE 8 (CONT'D)
SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS ***State Species of Special Concern (adapted from CDFW 2016 and USFWS 2016)***			
Common and scientific names	**Status**	**General habitat description**	*** Occurrence in the Project Site**
Long-eared owl (nesting) (*Asio otus*)	CSC	Occurs on edge habitats including in clumps of trees or edges of open forests that are adjacent to grasslands, shrublands, wetlands, marshes, and farmlands. Need stick nests built by other birds in trees.	**Possible**. Although the Aquamarine site does not support suitable nesting habitat for this species except for the potential for nesting to occur on utility poles, small clumps of suitable trees do exist along the Gen-tie route. Long-eared owls may use the Aquamarine site as foraging area.
Black swift (Cypseloides niger)	CSC	Migrants found in many habitats of state; in Sierra nests are often associated with waterfalls.	**Absent**. The Aquamarine site and the Gen-Tie corridor do not provide suitable breeding or foraging habitat for this species.
Vaux's swift *(Chaetura vauxi)*	CSC	Migrants move through the foothills of the western Sierra in spring and late summer. Some individuals breed in the region.	**Absent**. The Aquamarine site and the Gen-Tie corridor do not provide suitable breeding or foraging habitat for this species.
Loggerhead Shrike (*Lanius ludovicianus*)	CSC	Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low herbaceous cover. Can often be found in cropland.	**Present.** This species was observed on the Aquamarine site during the November 2016 and 2018 site visits. The Aquamarine site may support marginal nesting habitat within vegetated canals of the site, and shrubs and trees along the Gen-tie route would also support suitable nesting habitat.
Tulare grasshopper mouse (*Onychomys torridus tularensis*)	CSC	Arid shrubland communities in hot, arid grassland and scrub desert associations. These include blue oak woodlands at 450 m (1476 feet); upper sonoran subshrub scrub community; alkali sink and mesquite associations on the valley floor; and grasslands associations on the sloping margins of the San Joaquin Valley and Carrizo Plain region.	**Absent.** Suitable shrubland habitat is not present within the Aquamarine site or the Gen-Tie corridor.
Short-nosed kangaroo rat (*Dipodomys nitratoids brevinasus*)	CSC	Occur in lighter, powdery soils such as the sandy bottoms and banks of arroyos and other sandy areas with slightly too highly saline soils on gently sloping and rolling low hill-tops with shrubs.	**Absent**. Habitats required by short-nosed kangaroo rats are absent from the study area and surrounding agricultural lands due to intensive agricultural use.

TABLE 8 (CONT'D)
SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY

ANIMALS ***State Species of Special Concern (adapted from CDFW 2016 and USFWS 2016)***			
Common and scientific names	**Status**	**General habitat description**	*** Occurrence in the Project Site**
Townsend's Big-eared bat (*Corynorhinus townsendii*)	CSC	Primarily a cave-dwelling bat that may also roost in buildings. Occurs in a variety of habitats.	**Possible.** Suitable foraging habitat is present within the Aquamarine site and the Gen-Tie corridor; however, roosting habitat is absent.
Pallid bat (*Antrozous pallidus*)	CSC	Roosts in rocky outcrops, cliffs, and crevices with access to open habitats for foraging. May also roost in caves, mines, hollow trees and buildings.	**Possible.** Suitable foraging habitat for this species is present within the Project Site and Gen-Tie corridor; however, roosting habitat is absent.
California mastiff bat (*Eumops perotis* ssp. *californicus*)	CSC	Frequents open, semi-arid to arid habitats, including conifer, and deciduous woodlands, coastal scrub, grasslands, palm oasis, chaparral and urban. Roosts in cliff faces, high buildings, trees and tunnels.	**Possible.** Suitable foraging habitat for this species is present within the Project Site and Gen-Tie corridor; however, roosting habitat is absent.
American badger (*Taxidea taxus*)	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils, specifically grassland environments. Natal dens occur on slopes.	**Possible.** No burrows of the size and shape suitable for this species were observed on the Aquamarine site, or the Gen-Tie corridor, or in the area. It is possible this species may establish burrows within the Aquamarine site; however, it is unlikely that badgers would breed on the Aquamarine site, or the Gen-Tie corridor, or within the vicinity.
Ringtail *(Bassariscus astutus)*	CP	Riparian and heavily wooded habitats near water.	**Absent**. Habitat for this species is absent from the Aquamarine site, or the Gen-Tie corridor.

***Explanation of Occurrence Designations and Status Codes**
Present: Species observed within the project site at time of field surveys or during recent past.
Likely: Species not observed within the project site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed within the project site, but it could occur there from time to time.
Unlikely: Species not observed within the project site, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed within the project site, and precluded from occurring there because habitat requirements not met.

TABLE 8 STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CR	California Rare
FC	Federal Candidate	CP	California Fully Protected
		CSC	California Species of Special Concern

CNPS California Native Plant Society Listing
1A Plants Presumed Extinct in California
1B Plants Rare, Threatened, or Endangered in California and elsewhere

5 Plants Rare, Threatened, or Endangered in California, but more common elsewhere
6 Plants about which we need more information – a review list
7 Plants of limited distribution – a watch list

Source: Live Oak Associates, 2019

A detailed discussion of the species with potential to use the project site as breeding habitat (burrowing owl), and as a transit corridor (San Joaquin kit fox) follows. This discussion also includes Swainson's hawk, a potential forager on the site, due to its status as a listed Threatened Species in California.

Burrowing Owl

The burrowing owl is designated as a California Species of Special Concern, and has no federal listing status. This designation was based on the species' declining population within the state over the past 40 years. The population decline is mainly due to habitat destruction resulting from development and agricultural practices.

Burrowing owls are unique in that they are the only owl that regularly lives and breeds in underground nests. In California, these birds typically occur in the Central and Imperial Valleys, primarily utilizing ground squirrel burrows (or the burrows of other animals, e.g., badgers, prairie dogs and kangaroo rats) found in grasslands, open shrub lands, deserts, and, to a lesser extent, grazed and agricultural lands.

In November 2016, and in the springs of 2017 and 2018, LOA ecologists evaluated the Aquamarine site for the potential to support burrowing owls. In 2016, one burrowing owl was observed in the northwest portion of the site and flushed from a white 18-inch pipe that goes under a farm road. Based on the number of pellets and whitewash, the owl had been using this location for quite some time prior to the 2016 site visit. On April 10, 2018, three pair of burrowing owls and one single burrowing owl were observed along the canal south of and paralleling Laurel Avenue. No burrowing owls were observed along the Gen-Tie route; however, they could occur along the route in the future.

Currently, suitable habitat onsite consists mainly of man-made 'burrows', such as pipes, as well as ground squirrel burrows within and along the on-site canals. The Aquamarine site provides suitable nesting/denning habitat for burrowing owls in the form of California ground squirrel burrows along the edges of the agricultural fields and in and along the canals, and in the form of pipes in or on the ground, as well as foraging habitat within the agricultural fields. Canal maintenance activities have the potential to impact locations of burrowing owls, as many large canals support burrowing owls, such as the canal south of Laurel Avenue. However, LOA biologists observed that canals banks that had previously been subject to maintenance activities had subsequently been recolonized by burrowing owls. During the period between the maintenance activities and recolonization, the burrowing owls would take up temporary residence elsewhere.

The Gen-Tie route also supports some ground squirrel burrows, which would provide suitable burrow habitat for burrowing owls. Therefore, burrowing owls can be expected to occur along the Gen-Tie route in the future.

San Joaquin Kit Fox

The San Joaquin kit fox is a federally-listed Endangered species, and a California-listed Threatened species. The smallest North American member of the dog family (Canidae), the kit fox historically occupied the dry plains of the San Joaquin Valley, from San Joaquin County to southern Kern County. Local surveys, research projects, and incidental sightings indicate that kit fox currently occupy available habitat on the San Joaquin Valley floor and in the surrounding foothills.

Kit fox prefer open, arid habitats with loose soils. In the southern and central portion of the Central Valley, kit fox occur primarily in annual grassland and scrub habitats, but may also be found in grazed pasture, urban settings, and on the margins of tilled or fallow fields. They require underground dens to raise pups, regulate body temperature, and avoid predators and other adverse environmental conditions. In the central portion of their range, they usually occupy burrows excavated by small mammals such as California ground squirrels. Kit fox are primarily carnivorous, feeding on squirrels, black-tailed hares, desert cottontails, rodents, insects, and ground-nesting birds.

Conditions in the project area consist predominantly of cultivated and fallow agricultural fields, which are generally unsuitable for foraging kit fox. A few burrows were observed that were of suitable dimensions for kit fox, but most of these burrows were or appeared to be occupied by California ground squirrels, a burrowing owl, or were pipes either installed in the ground or laying on top of the ground. No kit fox, or their sign, were observed during the any of the site visits by LOA ecologists between 2011 and 2018.

According to records of kit fox sightings in the region, there have been a total of 40 historical (1975-2002) sightings within the 10 miles of the Aquamarine site. All of these sightings occur at least 7.5 miles from the project site. (For a map showing the locations of these kit fox sightings, see Figure 4 in LOA's biological report, contained in Appendix C of this document.) Considering the highly disturbed condition of the project site, its isolation from extant kit fox populations, and its marginal to poor suitability as foraging or denning habitat, it is unlikely any kit fox have taken up residence within the Aquamarine site or Gen-Tie corridor. However, the California Aqueduct, which the Gen-Tie route crosses, may be used as local movement corridor for this species. Based on the distribution of kit fox occurrences in the vicinity, the project area may only occasionally be used for regional movements of individual kit fox. Multiple large irrigation canals and drainage ditches running through the project area may act as movement corridors; however, should a kit fox utilize these corridors, the fox would have to travel through miles of marginal to poor habitat before reaching the Aquamarine site, which itself holds little habitat value.

Swainson's Hawk

The Swainson's hawk is designated as a California Threatened species, and has no federal listing status. The loss of agricultural lands (i.e., foraging habitat) to urban development and additional threats such as riverbank protection projects have contributed to its decline.

Swainson's hawks are large, broad-winged, broad-tailed hawks and have a high degree of mate and territorial fidelity. In the Central Valley they arrive at their nesting sites in March or April. The nest is likely to be a large stick nest (3 to 4 feet in diameter) constructed in a tree. In the Central Valley, Swainson's hawks typically nest in large trees within or peripheral to riparian systems adjacent to suitable foraging habitats. Other suitable nest sites include lone trees, groves of trees such as oaks, other trees in agricultural fields, and mature roadside trees. The young hatch sometime between March

and July and do not leave the nest until some 4 to 6 weeks later. Swainson's hawks forage in large, open fields with abundant prey, including grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands.

There are 36 Swainson's hawk nests within a 10-mile radius of the Aquamarine site and Gen-Tie corridor, with the nearest nest sites located 3.0 miles to the east of the Aquamarine site and 4.0 miles northwest of the Gen-Tie corridor. (For a map showing Swainson's hawk nests, see Figure 1 in Appendix D of LOA's biological report, which is contained in Appendix C of this document.) Between 2011 and 2018, LOA biologists conducted multiple surveys for Swainson's hawk nests in the project area. The surveys found no nest sites, and only one tree with poor nesting potential was found within one-half mile of the Aquamarine site. On several occasions during the surveys, a number of Swainson's hawks were observed foraging in agricultural fields in the project vicinity.

Based on their field surveys, LOA biologists concluded that Swainson's hawks may utilize portions of the Aquamarine site for foraging, but nesting is unlikely due to the absence of suitable nest trees. Along the Gen-Tie route, Swainson's hawks may nest where suitable trees exist.

Other Migratory Birds

Other migratory birds include most bird species with the exception of house sparrow and European starling, among a few other non-native birds. Migratory birds and their nests are protected under the Federal Migratory Bird Treaty Act of 1918 and California Fish and Game Code (Sections 3503 and 3513). Between approximately February 1 and August 31, migratory birds nest throughout California and the Central Valley on the ground and in grasses, shrubs, and trees.

Ground nesting birds such as burrowing owl and killdeer, among other disturbance-tolerating birds, may utilize the ground and agricultural vegetation of the Aquamarine site and Gen-Tie corridor for nesting.

Jurisdictional Waters

Jurisdictional waters include rivers, creeks, and drainages that are under the regulatory authority of the U.S. Army Corps of Engineers (USACE), the CDFW, and/or the California Regional Water Quality Control Board (RWQCB). The USACE regulates the filling or grading of jurisdictional waters under the authority of Section 404 of the Clean Water Act. The extent of jurisdiction within drainage channels is defined by "ordinary high water marks" on opposing channel banks. The nearest known water of the U.S. is the Kings River, which is approximately 1.8 miles east of the project site at its nearest point.

Two large irrigation canals run through the Aquamarine site along with several smaller canals and drainage ditches; however, these canals and ditches do not receive water from the Kings River, which is at a lower elevation than the Aquamarine site. Artificial waterways such as canals are typically not claimed by the agencies unless they receive water from a Known Water of the U.S., and then return water to a Known Water of the U.S. Thus, even if the canals and ditches on the Aquamarine site received water from a Known Water of the U.S., the Kings River, those waters do not return to the Kings River. As such, those canals and ditches do not fall under the jurisdiction of the USACE. Therefore, Waters of the U.S. are absent from the site.

Although the USACE has disclaimed jurisdiction over isolated wetlands, they are still regulated by the RWQCB under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Thus, although the canals and ditches may not fall under federal jurisdiction, the RWQCB may assert

jurisdiction over those portions of the canal and ditches of the Aquamarine site that function as wetlands. The Gen-Tie corridor will cross over the California Aqueduct and possibly other canals, ditches or drainage features. While it is unlikely that any aquatic features within the Gen-Tie corridor are waters of the United States, it is possible that any such features could be considered waters of the state of California and thus within the jurisdiction of the RWQCB.

The CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code. The CDFW typically only asserts jurisdiction over ponds, lakes, and natural drainages or manmade features that replace natural drainages and, therefore, is unlikely to regulate alterations to the manmade canals and ditches within the Aquamarine site or crossed by the Gen-Tie Line.

For a detailed discussion of jurisdictional waters, see the LOA biological report in Appendix C of this document.

Wildlife Movement Corridors

Wildlife movement corridors are areas where regional wildlife populations regularly and predictably move during dispersal or migration. Movement corridors in California are typically associated with valleys, rivers and creeks supporting riparian vegetation, and ridgelines. The nearest significant riparian corridor that likely facilitates regional movement of wildlife is the Kings River to the northeast of the site. This riparian area is located approximately 1.8 miles to the east of the Aquamarine site at its nearest point. To a lesser extent, the California Aqueduct, located 2.5 miles west of the Kings/Fresno County line, is also expected to act as a movement corridor.

The canals and ditches within and adjacent to the Aquamarine site can function as movement corridors for the regular home range or dispersal movements of native wildlife, including special status species.

Designated Critical Habitat

The USFWS often designates areas of "critical habitat" when it lists species as threatened or endangered. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. There are no designated critical habitat areas in the project vicinity.

Natural Communities of Special Concern

Natural communities of special concern are those that are of limited distribution, have significant biological diversity, or provide important habitat for special status species. The California Department of Fish and Wildlife is responsible for the classification and mapping of all natural communities in California. Natural communities are assigned state and global ranks according to their degree of imperilment. Examples of natural communities of special concern in the vicinity of the project site include vernal pools, such as those found east of the Kings River, and various types of riparian forest, such as those found along the Kings River. The vegetation associations present on the project site are dominated by non-native species, and are not considered natural communities of special concern.

Habitat Conservation Plans (HCPs)

The only HCP that may apply to the Aquamarine and Gen-Tie projects is PG&E's "San Joaquin Valley Operations and Maintenance Habitat Conservation Plan." This HCP covers 23 wildlife species and 42

plant species for 33 routine operations and maintenance activities for PG&E's electric and gas transmission and distribution systems within nine counties in the San Joaquin Valley, including Kings County. The HCP prescribes best management practices to ensure that PG&E's operational and maintenance activities comply with the federal and state Endangered Species Acts. The proposed project is within the boundaries of the HCP. Although the HCP mainly covers operational and maintenance activities, it also covers small construction projects, such as minor extensions of electrical lines (CDFG 2008).

There are no other HCPs or Natural Community Conservation Plans that cover the project area. However, the USFWS has adopted the *Recovery Plan for Upland Species of the San Joaquin Valley* which covers 34 species of plants and animals that occur in the San Joaquin Valley. The majority of these species occur in arid grasslands and scrublands of the San Joaquin Valley and the adjacent foothills and valleys. The plan includes information on recovery criteria, habitat protection, umbrella and keystone species, monitoring and research program, adaptive management, and economic and social considerations. The only species addressed in the recovery plan that potentially occurs in the project vicinity is the San Joaquin kit fox, although no sightings of this species have been recorded in the immediate vicinity of the Aquamarine site or Gen-Tie corridor, as discussed above. The Recovery Plan does not identify the project area or any other lands in the vicinity as areas that should be protected as Specialty Reserve Areas, Wildlife-Compatible Farmland to be Maintained, or Areas Where Connectivity and Linkages Should be Promoted (USFWS 1998).

Environmental Evaluation

a) Would the project 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 Game or U.S. Fish and Wildlife Service?

Aquamarine Solar Facility and Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. The Aquamarine Solar Project and Gen-Tie Line would have a potentially significant impact upon two species of wildlife, including: San Joaquin kit fox, a federally-listed Endangered species and a California-listed Threatened species, and; burrowing owl, a California Species of Special Concern. The project could also have a potentially significant impact upon ground nesting bird species, which are protected under the Migratory Bird Treaty Act. There is also a concern with cumulative impacts to foraging habitat of the Swainson's hawk, a California-listed Threatened species. The potential project impact to each of these and other special status species is discussed below, along with mitigation measures that would reduce the impacts to *less-than-significant* levels.

San Joaquin kit fox

Kit fox infrequently use the heavily farmed areas in the project vicinity as is evident from the lack of sightings within at least 7.0 miles of the Aquamarine site over the past 35 years. (Along the Gen-Tie route, the nearest recorded sightings are along the California Aqueduct, and these are from 1981.) While the lands in the project area do not provide suitable forage and denning habitat for kit foxes, there is a potential that kit fox may occasionally traverse the site vicinity while dispersing to another location. The Aquamarine project and Gen-Tie Line are expected to result in a less-than-significant

impact on kit fox foraging and denning habitat, and they are not expected to impede regional movement patterns as their occurrence on or near the Aquamarine site and Gen-Tie corridor is expected to be uncommon.

Although the Aquamarine site and Gen-Tie corridor do not provide suitable kit fox habitat, any kit foxes traversing the area during the construction phases could be harmed, injured or killed. Therefore, there is a potentially significant impact to individual kit foxes, should they traverse the Aquamarine site and Gen-Tie corridor during construction. The potential impacts to San Joaquin kit fox would be reduced to a *less-than-significant* levels through implementation of the following mitigation measure.

Mitigation Measure BIO-1: San Joaquin Kit Fox Protection. *In order to minimize the potential for impacts to San Joaquin kit fox, the following measures shall be implemented in conjunction with the construction of the Aquamarine Solar Project and the Gen-Tie Line:*

a. *Pre-construction Surveys. Pre-construction surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance, construction activities, and/or any project activity likely to impact the San Joaquin kit fox. These surveys shall be conducted in accordance with the "U.S. Fish and Wildlife Service Standardized Recommendations* for *Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance" (USFWS 2011). The primary objective is to identify San Joaquin kit fox habitat features (e.g., potential dens and refugia) on the project site and evaluate their use by San Joaquin kit fox. If an active San Joaquin kit fox den is detected within or immediately adjacent to the area of work, the USFWS shall be contacted immediately to determine the best course of action.*

b. *Kit Fox Avoidance Measures. Should San Joaquin kit fox be found using the Aquamarine Solar Project site or Gen-Tie corridor during preconstruction surveys, the construction activity shall avoid the habitat occupied by kit fox and the Sacramento Field Office of the USFWS and Fresno Field Office of CDFW shall be notified.*

c. *Minimization of Potential Disturbance to Kit Fox. Whether or not kit foxes are found to be present, all permanent and temporary construction activities and other types of project-related activities shall be carried out in a manner that minimizes disturbance to San Joaquin kit fox. Minimization measures include, but are not limited to: restriction of project-related vehicle traffic to established roads, construction areas, and other designated areas; inspection and covering of structures (e.g., pipes), as well as installation of escape structures, to prevent the inadvertent entrapment of San Joaquin kit fox; restriction of rodenticide and herbicide use; and proper disposal of food items and trash. The full list of protection measures required by the USFWS during construction and operation contained in USFWS Standardized Recommendations (USFWS 2011), and is presented in Table BIO-1. The protection measures set forth in Table BIO-1 are fully incorporated into this mitigation measure by reference.*

d. *Employee Education Program. Prior to the start of construction, the applicant shall retain a qualified biologist to conduct an on-site training session to educate all construction staff on the San Joaquin kit fox. This training shall include a description of the San Joaquin kit fox, a brief summary of their biology; and a list of minimization measures and instructions on what to do if a San Joaquin kit fox is observed within the Aquamarine Solar Project site or Gen-Tie corridor.*

Table BIO-1

U.S. FISH AND WILDLIFE SERVICE STANDARDIZED RECOMMENDATIONS FOR PROTECTION OF THE ENDANGERED SAN JOAQUIN KIT FOX PRIOR TO OR DURING GROUND DISTURBANCE

CONSTRUCTION AND ON-GOING OPERATIONAL REQUIREMENTS

1. Project-related vehicles should observe a daytime speed limit of 20-mph throughout the site in all project areas, except on county roads and State and Federal highways; this is particularly important at night when kit foxes are most active. Night-time construction should be minimized to the extent possible. However if it does occur, then the speed limit should be reduced to 10-mph. Off-road traffic outside of designated project areas should be prohibited.
2. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2-feet deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the Service and the California Department of Fish and Wildlife (CDFW) shall be contacted as noted under measure 13 referenced below.
3. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the USFWS has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.
4. All food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least once a week from a construction or project site.
5. No firearms shall be allowed on the project site. (This prohibition does not apply to law enforcement personnel such as Sheriff's Deputies or the Fire Marshal.)
6. No pets, such as dogs or cats, should be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.
7. Use of rodenticides and herbicides in project areas should be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the USFWS. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox. A representative shall be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the USFWS.
8. A representative shall be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the USFWS

(Continued on next page.)

Table BIO-1 (Cont'd)

U.S. FISH AND WILDLIFE SERVICE STANDARDIZED RECOMMENDATIONS FOR PROTECTION OF THE ENDANGERED SAN JOAQUIN KIT FOX PRIOR TO OR DURING GROUND DISTURBANCE

CONSTRUCTION AND ON-GOING OPERATIONAL REQUIREMENTS

9. An employee education program should be conducted for any project that has anticipated impacts to kit fox or other endangered species. The program should consist of a brief presentation by persons knowledgeable in kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the project. The program should include the following: A description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the previously referenced people and anyone else who may enter the project site.
10. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc., should be re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas should be determined on a site-specific basis in consultation with the USFWS, California Department of Fish and Wildlife (CDFW), and revegetation experts.
11. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape, or the USFWS should be contacted for guidance.
12. Any contractor, employee, or military or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact the CDFW immediately in the case of a dead, injured or entrapped kit fox. The CDFW contact for immediate assistance is State Dispatch at (916) 445-0045. They will contact the local warden or Mr. Paul Hoffman, the wildlife biologist, at (530) 934-9309. The USFWS should be contacted at the numbers below.
13. The Sacramento Fish and Wildlife Office and CDFW shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The USFWS contact is the Chief of the Division of Endangered Species, at the addresses and telephone numbers below. The CDFW contact is Mr. Paul Hoffman at 1701 Nimbus Road, Suite A, Rancho Cordova, California 95670, (530) 934-9309.
14. New sightings of kit fox shall be reported to the California Natural Diversity Database (CNDDB). A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the Service at the address below.

Any project-related information required by the Service or questions concerning the above conditions or their implementation may be directed in writing to the U.S. Fish and Wildlife Service at:

Endangered Species Division
2800 Cottage Way, Suite W2605
Sacramento, California 95825-1846
(916) 414-6620 or (916) 414-6600

e. *Mortality Reporting. The Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW shall be notified in writing within three working days in case of the accidental death of or injury to a San Joaquin kit fox during project-related activities. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and any other pertinent information.*

f. *Wildlife-friendly Fencing. The perimeter fencing surrounding each phase of the Aquamarine Solar Project shall consist of wildlife-friendly or permeable fencing that allows San Joaquin kit fox and other wildlife to move through the site unimpeded. The bottom of the perimeter fencing shall be 5 to 7 inches above the ground, as measured from the top of the ground to the lowest point of the fence. The bottom of the fence edges shall be knuckled (wrapped back to form a smooth edge) to allow wildlife to pass through safely. The fencing shall not be electrified.*

Raptors and Migratory Birds

In addition to the Swainson's hawk and burrowing owl (discussed below), several other raptor species such as the northern harrier, prairie falcon, peregrine falcon, and red-tailed hawk are known to forage in the project area. Additionally, the Aquamarine site and Gen-Tie corridor area provide nesting habitat for a number of migratory bird species, including, but not limited to, the snowy plover, black-necked stilt, great-horned owl, common raven, loggerhead shrike, house finch, Brewer's blackbird, and tricolored blackbird. Nearly all native bird species are protected by the federal Migratory Bird Treaty Act. The canal and ditch habitat, as well power poles and barren ground on the Aquamarine site and Gen-Tie corridor, provide potential nesting habitat for these species. If birds were to nest in these areas prior to construction, project-related activities could result in the abandonment of active nests or direct mortality to these birds. Construction activities that adversely affect the nesting success of raptors or result in mortality of individual birds constitute a violation of state and federal laws (see Section 3.2.2 and 3.2.3 of the LOA report in Appendix C) and would be represent a significant impact.

The potential impacts to ground nesting raptors and migratory birds would be reduced to a *less-than-significant* levels through implementation of the following mitigation measure.

Mitigation Measure BIO-2: Protection for Nesting Raptors and Migratory Birds. *In order to minimize construction disturbance to active raptor and other bird nests, the following measures shall be implemented in conjunction with the construction of the Aquamarine Solar Project and Gen-Tie Line:*

a. *Pre-construction Surveys. If tree removal, site preparation, grading, or construction is planned to occur within the breeding season (February 1 - August 31), a qualified biologist shall conduct pre-construction surveys for active migratory bird nests within 10 days of the onset of these activities. If construction activity is planned to commence outside the breeding period, no pre-construction surveys are required for nesting birds and raptors.*

b. *Monitoring Active Nests. Should any active nests be discovered in or near planned construction zones, a qualified biologist shall continuously monitor identified nests for the first 24 hours prior to any construction related activities to establish a behavioral baseline. Once work commences, continuously monitor all nests to detect any behavioral changes as a result of the project. If behavioral changes are observed, stop the work causing that change*

and consult with the California Department of Fish and Wildlife for additional avoidance and minimization measures.

c. *Exclusion Zones for Active Nests. Alternatively, should any active nests be discovered in or near the planned construction zones, the biologist shall* establish a *250-foot construction-free buffer around the nest for non-listed birds, 500-foot buffer for unlisted raptors, and a half-mile for listed bird species. This buffer shall be identified on the ground with flagging or fencing, and shall be maintained until the biologist has determined that the young have fledged. Variance from these setback distances may be allowed if a qualified biologist provides compelling biological or ecological reason to do so and if CDFW is notified in advance of implementation of a no disturbance buffer variance.*

d. *Tailgate Training for Workers. All construction and operations workers on the Aquamarine Solar Project and Gen-Tie Line shall be trained by a qualified biologist. The tailgate training shall include a description of the Migratory Bird Treaty Act, instructions on what to do if an active nest is located, and the importance of capping pipes and pipe-like structures standing upright in order to avoid birds falling into the pipes and getting stuck.*

e. *Capping of Hollow Poles and Posts. Should any vertical tubes, such as solar mount poles, chain link fencing poles, or any other hollow tubes or poles be utilized on the Aquamarine project site, the poles shall be capped immediately after installation to prevent entrapment of birds.*

Burrowing Owl

The Aquamarine site provides suitable nesting/denning habitat for burrowing owls in the form of California ground squirrel burrows along the edges of the agricultural fields, and in and along the canals and ditches, and in the form of pipes in or on the ground. The Aquamarine site also provides foraging habitat within the agricultural fields. During LOA's 2016 and 2018 site visits, burrowing owls were identified on the project site along the banks of canals. Since the Aquamarine project would not involve disturbance to the canals on or adjacent to the site, the known locations of burrowing owl burrows along the on-site canals would be avoided. In addition, adequate suitable foraging habitat exists to the east of the Aquamarine project site to support these owls.

For any burrowing owls that occur elsewhere within the Aquamarine site, both breeding and foraging habitat could be lost due to the Aquamarine project. This would constitute a significant impact to burrowing owl foraging and breeding habitat.

The Gen-Tie Line would result in very little loss of foraging habitat and likely no loss of breeding habitat for burrowing owls.

These small raptors are protected under the federal Migratory Bird Treaty Act and California Fish and Game Code. Ground disturbing activities associated with construction of the Aquamarine Solar Project and Gen-Tie Line may also result in the mortality of burrowing owls, as they are known to retreat into their burrows ahead of approaching heavy equipment. Mortality of individual birds would be a violation of state and federal law, and would constitute a significant environmental impact.

The potential impacts to burrowing owls would be reduced to a *less-than-significant* levels through implementation of the following mitigation measures.

Mitigation Measure BIO-3: Burrowing Owl Protection. *In order to minimize the potential for impacts to burrowing owls, the following measures shall be implemented, as necessary, in conjunction with the construction of the Aquamarine Solar Project and the Gen-Tie Line:*

a. *Pre-Construction Surveys. Pre-construction surveys shall be conducted by a qualified biologist no more than 10 days prior to the onset of ground-disturbing activity. These surveys shall be conducted in accordance with the* Staff Report on Burrowing Owl Mitigation *(CDFG 2012) or the most recent CDFW guidelines. The surveys shall cover all areas of suitable habitat within the planned construction zones.*

b. *Avoidance of Active Nests During Breeding Season. If pre-construction surveys are undertaken during the breeding season (February through August) and active nest burrows are located within or near construction zones, a construction-free buffer of 250 feet shall be established around all active owl nests. The buffer areas shall be enclosed with temporary fencing, and construction equipment and workers shall not be allowed to enter the enclosed setback areas. Buffers shall remain in place for the duration of the breeding season. After the breeding season (i.e., once all young have left the nest), passive relocation of any remaining owls may take place, but only under the conditions described below.*

c. *Avoidance of Occupied Burrows During Non-Breeding Season, and Passive Relocation of Resident Owls. During the non-breeding season (September through January), any burrows occupied by resident owls in areas planned for construction shall be protected by a construction-free buffer with a radius of 250 feet around each active burrow. Passive relocation of resident owls is not recommended by CDFW where it can be avoided. If passive relocation is not avoidable, resident owls may be passively relocated according to a relocation plan prepared by a qualified biologist.*

d. *Tailgate Training for Workers. All construction workers shall attend a tailgate training session conducted by a qualified biologist. The training is to include a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a burrowing owl is observed within or near a construction zone.*

e. *Mitigation for Loss of Burrowing Owl Habitat. If it is determined that burrowing owl nest(s) are located on or near the Aquamarine project site or Gen-Tie corridor, the biologist shall coordinate with the project applicant and resource agency to determine whether relocation of these nest(s) is unavoidable. If so, measure #1 below (off-site conservation easement) would apply. If the on-site or nearby nest(s) are to remain in place, the biologist shall determine whether sufficient foraging habitat is available on adjacent or nearby lands, and if so, no further mitigation is required. (Approximately 200 acres of year-round foraging habitat within about 2 miles of the burrowing owl burrow is required to support a burrowing owl pair.) If it is determined that there is insufficient nearby foraging habitat, the biologist shall determine the amount of on-site foraging habitat that is required to sustain the burrowing owl nest. In this case, the potential impact to foraging habitat shall be either avoided through implementation of measure #2 below (on-site buffer zone), or compensated through implementation of measure #1 (conservation easement) or measure #3 (long-term agreement on adjacent lands) below:*

1) *Establishment of a conservation easement with a 1:1 ratio for foraging/breeding habitat preservation. These easements would include habitats determined to be suitable for foraging and/or breeding year-round and seasonal use.*

2) *Establishment of permanent buffer zones of adequate size around current burrowing owl locations. These buffer zones would require adequate management for the life of the project and buffer zones to ensure the buffer area remains suitable for burrowing owls. Annual monitoring of the suitability of management activities may be required by CDFW.*

3) *Short- or long-term compensation for foraging habitat by providing farmers in adjacent lands incentives to plant particular crops known to be suitable forage habitat for burrowing owls (i.e., winter wheat, alfalfa, etc.) and to enact a farmer burrowing owl safety program where farmers are trained how to reduce burrowing owl mortalities on their lands and farm roads. A 1:1 ratio would be required to be in the program as long as the project is active.*

Swainson's Hawk

Impacts to Swainson's Nesting Habitat

As discussed under 'Biological Setting,' nesting habitat for Swainson's hawks is absent from the Aquamarine project site and its immediate vicinity. The nearest previously observed nest is located 2 miles east of the Aquamarine site. No potential nest sites are located within the project site or its immediate vicinity due to the absence of suitable nesting trees. The nearest potential nest sites occur in large Gooding's willows in riparian habitat around the tailwater pond located 1.5 miles southwest of the Aquamarine site. Therefore, the impact to nesting habitat for Swainson's hawk due to construction of the Aquamarine Solar Project would be *less than significant*.

In the vicinity of the Gen-Tie corridor, the nearest previously observed Swainson's hawk is located 3 miles north near the California Aqueduct in Fresno County. Potential nest sites occur in the larger trees associated with agricultural and residential structures along the Gen-Tie route. Construction activities occurring near an active Swainson's hawk nest could adversely affect nesting success or result in mortality of individual birds constitute a violation of state and federal laws and would be considered a significant impact under CEQA.

Mitigation Measure BIO-4: Swainson's Hawk Protection. *In order to minimize the potential for impacts to Swainson's hawks, the following measures shall be implemented, as necessary, in conjunction with the construction of the Gen-Tie Line:*

a. *Pre-Construction Surveys. During the nesting season prior to the construction of the Gen-Tie Line within a half-mile of a potential nest tree, preconstruction surveys shall be conducted within the construction zones and adjacent lands to identify any nesting pairs of Swainson's hawks. These surveys will conform to the guidelines of CDFW as presented in* RECOMMENDED TIMING AND METHODOLOGY FOR SWAINSON'S HAWK NESTING SURVEYS IN CALIFORNIA'S CENTRAL VALLEY, Swainson's Hawk Technical Advisory Committee, May 31, 2000. *No preconstruction surveys are required for construction activity located farther than a half-mile from a potential nest tree.*

b. *Establish Buffers. Should any active nests be discovered in or near proposed construction zones, the qualified biologist shall establish a suitable construction-free buffer around the*

nest. This buffer shall be identified on the ground with flagging or fencing, and shall be maintained until the biologist has determined that the young have fledged.

c. *Tailgate Training. All workers on the construction of the Gen-Tie Line shall attend tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a Swainson's hawk is observed on or near the construction zone.*

Project Impacts to Swainson's Hawk Foraging Habitat

It is possible that Swainson's hawks may occasional forage on the Aquamarine site and Gen-Tie corridor, but given the regional abundance of foraging habitat, the loss of foraging habitat resulting from the Aquamarine Solar Project and Gen-Tie Line would represent a *less-than-significant* impact to foraging habitat for Swainson's hawk.

Cumulative Impacts to Swainson's Hawk Foraging Habitat

As mentioned, Swainson's hawks are known to forage in the vicinity of the Aquamarine project site and Gen-Tie corridors. As part of its biological assessment for the Program EIR on the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan, conducted in 2017, LOA completed a comprehensive analysis of potential impacts to Swainson's hawk foraging habitat associated with development of the WSP Master Plan area and all other approved, pending, and completed projects within a 10-mile radius of the WSP plan area (WWD 2017). The analysis identified all known Swainson's hawk nests that were previously observed during surveys by LOA or others. In 2018, LOA biologists conducted follow-up surveys to identify currently active nests. LOA biologists also reviewed and updated their detailed 2017 analysis of foraging habitat within a 10-mile radius of the WSP plan area and concluded that abundant habitat that would remain after full development of the WSP plan area, and all other cumulative projects (including projects proposed since 2017) within this 10-mile radius, would be more than sufficient to support all of the known Swainson's hawk nests within this radius, with surplus capacity to support additional nesting pairs. The full analysis is contained in Appendix D of LOA's biological report, which is contained in Appendix C of this document, and is summarized below.

LOA's 2018 analysis update began with an inventory of known Swainson's hawk nests within a 10-mile radius of the project site. The study found that there are 36 documented nests within this radius, the nearest of which is over 7.5 miles from the Aquamarine project site.

LOA's analysis of potential cumulative impacts to Swainson's hawk foraging habitat employed a study methodology established by Estep Environmental Consulting (Estep), and which has been applied in similar studies on previous solar projects in Kings County. The first step in this analysis was to make a determination as to the amount of surplus foraging habitat available that is not considered to be required by existing Swainson's hawks that are currently nesting in the area. Based on LOA's application of Estep's methodology, it was calculated that there is currently a surplus of 135,492 acres of suitable foraging habitat within the study area. (See LOA's Biological Assessment in Appendix C of this document for a full description of the habitat calculations.)

In order to determine the potential cumulative impacts to foraging habitat, all of the pending, approved, and completed solar projects within the study area were identified and mapped. It was determined that the 23 cumulative projects (including the Aquamarine project) occupy a total of

34,583 acres within the study area (this includes the entire WSP plan area of 20,938 acres). For purposes of analysis, this entire acreage was conservatively assumed to comprise suitable foraging habitat, whereas the actual total would be less after subtracting acreage in tree crops and vineyards which provide little or no foraging value for Swainson's hawks.

In order to determine if this cumulative loss of foraging habitat represented a significant cumulative impact, Estep established that a reduction of surplus habitat to less than 70 percent relative to pre-project conditions would represent a cumulatively significant impact (Estep 2012). As presented in LOA's Biological Assessment (see Appendix C of this document), it was calculated that the cumulative projects would reduce the total surplus foraging habitat in the study area to 100,909 acres (i.e., 135,492 acre pre-project surplus minus 34,583 acres cumulative loss). This remaining acreage of surplus foraging area represents 74.5 percent of the pre-project total. Since the remaining surplus foraging acreage is greater than 70 percent of the pre-project surplus foraging acreage in the study area, the cumulative impact to the Swainson's hawk foraging acreage in the study area was determined to be *less than significant*.

American Badgers

Given the observations of American badgers, a California Species of Special Concern, on nearby lands with similar habitats to those of the Aquamarine project site and the Gen-Tie corridor, the potential exists that the American badger may reside within the Aquamarine site and Gen-Tie corridor. No badgers or badger burrows were observed in the area during any of the surveys of the Aquamarine site and Gen-Tie corridor conducted from 2011 through 2018. Potential badger habitat was found on the Aquamarine site and Gen-Tie corridor in the form of fallow fields. While the occurrence of badgers is expected to be unlikely, it cannot be ruled out. As such, there is a potential for significant impact to American badgers.

Mitigation Measure BIO-5: American Badger Mitigation. *The following measures shall be implemented to minimize impacts to the American badger, as necessary, in conjunction with the construction of the Aquamarine Solar Project and Gen-Tie Line:*

a. *Preconstruction Surveys for American Badger. During the course of pre-construction surveys prescribed for other species, a qualified biologist shall also determine the presence or absence of badgers prior to the start of construction. If badgers are found to be absent, a report shall be written to the applicant so stating and no other mitigations for the protection of badgers would be warranted.*

b. *Avoidance of Active Badger Dens and Monitoring. If an active badger den is identified during pre-construction surveys within or immediately adjacent to an area subject to construction, a construction-free buffer of up to 300 feet shall be established around the den. Once the biologist has determined that the badger(s) have vacated the burrow, the burrow can be collapsed or excavated, and ground disturbance can proceed. Should the burrow be determined to be a natal or reproductive den, and because badgers are known to use multiple burrows in a breeding burrow complex, a biological monitor shall be present on-site during construction activities in the vicinity of the burrows to ensure the buffer is adequate to avoid direct impact to individuals or natal/reproductive den abandonment. The monitor shall be required on-site until it is determined that young are of an independent age and construction activities would not harm individual badgers.*

c. *Tailgate Training for Workers. All construction workers shall attend a tailgate training session conducted by a qualified biologist. The training is to include a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if an American Badger is observed.*

Loss of Habitat for Special Status Plants

Three special status vascular plant species are known to occur in the vicinity of the project site: California jewel-flower, San Joaquin woollythreads, and round leaved filaree. Because of the many decades of agricultural disturbance, habitat for these plant species is absent from the Aquamarine project site and Gen-Tie corridor. Therefore, the impacts to regional populations of these species would be less than significant.

Loss of Habitat for Special Status Animals Absent or Unlikely to Occur in the Project Area

Of the 36 special status animal species potentially occurring in the region, 21 species would be absent or unlikely to occur within the Aquamarine site or Gen-Tie corridor due to unsuitable habitat conditions. These include the vernal pool fairy shrimp, valley elderberry longhorn beetle, California tiger salamander, western spadefoot, western pond turtle, Temblor legless lizard, coast horned lizard, blunt-nosed leopard lizard, giant garter snake, California glossy snake, San Joaquin whipsnake, American white pelican (nesting), black swift, Vaux's swift, western yellow-billed cuckoo, Nelson's antelope squirrel, giant kangaroo rat, Fresno kangaroo rat, Tipton kangaroo rat, Tulare grasshopper mouse, and ringtail. Construction of the Aquamarine Solar Project and Gen-Tie Line would have no impact on these species because there is little or no likelihood that they are present.

Loss of Habitat for Special Status Animals that May Occur as Occasional or Regular Foragers or Disperse through the Project Area but Breed Elsewhere

There are 10 species that may occasionally utilize the Aquamarine site and Gen-Tie corridor for foraging or dispersal movements but would breed elsewhere. These include: western snowy plover, mountain plover, white-faced ibis, northern harrier, white-tailed kite, loggerhead shrike, tricolored blackbird, Townsends's big-eared bat, pallid bat, and California mastiff bat. LOA's biologists determined that the Aquamarine project site and Gen-Tie corridor do not provide regionally important foraging habitat for these species (see LOA Biological Assessment in Appendix C of this document). Considerable habitat suitable for migratory movements and winter foraging would continue to be available for these species on other lands within the region following development of the project. Therefore, project development would result in a *less-than-significant impact* on these species due to loss of foraging habitat.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. As discussed in 'Biological Setting' above, LOA determined that the canals and ditches on and adjacent to the Aquamarine site and the Gen-Tie corridor do not meet the requirements of the USACE as a jurisdictional wetland. The construction of the Aquamarine Solar Project is not

planned or expected to encroach upon or physically alter any on-site or off-site canals. The agricultural lands that occupy the Aquamarine site and Gen-Tie corridor are not considered sensitive habitats and do not provide significant habitat value to regional wildlife populations. Because riparian and other sensitive habitats are absent, construction of the Aquamarine Solar Project and Gen-Tie Line would have *no impact* on riparian habitat or other sensitive natural community.

c) Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. As discussed in 'Biological Setting' above, there are no "Waters of the U.S." within or adjacent to the Aquamarine project site or Gen-Tie corridor. Because the project would avoid potential Waters of the U.S. and federally protected wetlands, potential project impacts to federally protected wetlands would be *less-than-significant*.

At the state level, wetlands are regulated by the RWQCB under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Thus, although the canals and ditches may not fall under federal jurisdiction, the RWQCB may assert jurisdiction over those portions of the canal and ditches of the Aquamarine site that function as wetlands. The Gen-Tie corridor will cross over the California Aqueduct and possibly other canals, ditches or drainage features. The wetland habitat associated with the irrigation canals and ditches on the Aquamarine site would be avoided by the Aquamarine project. The Gen-Tie line would not adversely affect any wetland habitat in the canals and ditches that it crosses or runs adjacent to. Therefore, the potential project impacts of the Aquamarine Solar Project and Gen-Tie Line to wetlands would be *less-than-significant*.

d) Would the project 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 native wildlife nursery sites?

Aquamarine Solar Facility and Gen-Tie Line

Less-than-Significant Impact. It is likely that some species use the canals and ditches on the Aquamarine site as movement corridors, including San Joaquin kit fox. The Aquamarine site likely has some small value for the regional movements of some wildlife species; however, the canal and ditch system has greater value when placed in a regional context. As the development of the Aquamarine site as a solar generating facility would not affect existing canals, which would continue to be operated and managed as they are under current conditions, it is expected that wildlife that currently uses the canals for movement will continue to use the canal system to move through the area after the Aquamarine project is completed.

To allow for ground movement of wildlife through the project site, all fencing enclosing the solar facility is planned to consist of "wildlife friendly" fencing with a continuous 5- to 7-inch separation from the top of the ground to the lowest point of the bottom of the fence along the entire fence. Such fencing will not be electrified.

In the vicinity of the Gen-Tie corridor, the California Aqueduct is likely used as a movement corridor for local wildlife. However, given the very light footprint of the Gen-Tie line, it is unlikely that it would affect local wildlife movement along the Aqueduct or any other linear feature.

In summary, wildlife currently using the Aquamarine project site and Gen-Tie corridor for movement are expected to continue to do so after project completion, given that wildlife friendly fencing will be installed around the Aquamarine project and the canal and ditch system will be retained within the solar facility, thus allowing for wildlife movement through the site unimpeded. Therefore, the Aquamarine Solar Project and Gen-Tie line would result in a *less-than-significant impact* on regional or local wildlife movements.

With respect to native wildlife nursery sites, the aquatic habitat associated with the irrigation canal and ditches on the Aquamarine site could provide nursery sites for native wildlife. These features would be avoided by the Aquamarine project. The Gen-Tie line would not adversely affect any aquatic habitat in the canals and ditches that it crosses or runs adjacent to. Therefore, the potential project impacts of the Aquamarine Solar Project and Gen-Tie Line to wildlife nursery sites would be *less-than-significant*.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. The "Resource Conservation Element" of the *2035 Kings County General Plan* contains several goals and policies pertaining to biological resources. The resource conservation goals of the Kings County General Plan relating to biological resources are summarized as follows: 1) protect the Kings River and associated riparian habitat; 2) preserve land that contains important natural plant and animal habitats; 3) maintain the quality of natural wetland areas; 4) protect and manage riparian environments as valuable resources. The corresponding policies require biological assessments of proposed development projects, including coordination with the resource agencies and compliance with their permitting requirements, and mitigation for potential impacts to biological resources (Kings County 2010b). The project would assure consistency with the General Plan goals and policies on biological resource projection through completion of this environmental impact review pursuant to CEQA, including project incorporation of mitigations recommended by the resource agencies. Thus the Aquamarine Solar Project and Gen-Tie Line would be consistent with the relevant General Plan goals and polices and would have *no impact* in terms of conflicts with those policies.

Kings County does not have any ordinances protecting biological resources, such as a tree preservation ordinance. However, General Plan Resource Conservation Policy E1.1.2 requires the preservation of healthy native trees as a primary objective in the review of development projects (Kings County 2010b). Neither the Aquamarine project site nor Gen-Tie corridor includes trees, so they would have *no impact* in terms of conflict with this tree preservation policy.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. As discussed in 'Biological Setting' above, the only HCP that may apply to the project is PG&E's "San Joaquin Valley Operations and Maintenance Habitat Conservation Plan." The proposed project is within the boundaries of the HCP. Although the HCP covers operational and maintenance activities, it also covers small construction projects such as minor extensions of electrical lines (CDFW 2008). The HCP would likely cover the project's interconnection to PG&E's system (at the Gates Substation in Fresno County), but would not cover construction of Aquamarine Solar Project or Gen-Tie Line themselves. The mitigation measures identified above for protection of wildlife during project construction and operation would be compatible with the requirements of the HCP since they also ensure compliance with the federal and state Endangered Species Acts. Therefore, the project would have *no impact* in terms of potential conflict with this HCP.

The USFWS has adopted the *Recovery Plan for Upland Species of the San Joaquin Valley* which covers 34 species of plants and animals that occur in the San Joaquin Valley. The majority of these species occur in arid grasslands and scrublands of the San Joaquin Valley and the adjacent foothills and valleys. The only species covered in the recovery plan that potentially occurs in the project vicinity is the San Joaquin kit fox, although no sightings of this species have been recorded in the project area since 1981, as discussed above. The Recovery Plan does not identify the project site or any other lands in the vicinity as areas that should be protected as Specialty Reserve Areas, Wildlife-Compatible Farmland to be Maintained, or Areas Where Connectivity and Linkages Should be Promoted (USFWS 1998). Because the San Joaquin kit fox has the potential to occur on the site, the mitigation measures identified above in MM Bio-1 would mitigate any potential project impacts to kit fox. Therefore, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* in terms of potential conflict with the "Recovery Plan."

Neither the Aquamarine project site nor the Gen-Tie corridor is covered by any other existing Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP), or any other conservation plan adopted at the local, regional, state, or federal level. Therefore, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* in terms of potential conflict with any such plans.

REFERENCES – BIOLOGICAL RESOURCES

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4.5 CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	■	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	■	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	■	☐	☐

The evaluation in this section is based on the cultural resources report prepared by Basin Research Associates in December 2018. The Basin Research Associates report is kept administratively confidential by the Kings County Community Development Agency (CDA) pursuant to Government Code Section 6254, subdivision (r) and Section 6254.10.

The research conducted for the cultural resources report by Basin Research Associates included a prehistoric and historic site records search through the California Historical Resources Information System, Southern San Joaquin Valley Information Center, California State University (CSU) Bakersfield. In addition, Basin Research conducted a review of pertinent literature and archival records, and cultural resources compliance reports on other projects in the area, among other sources.

The Native American Heritage Commission (NAHC) was contacted concerning resources listed on the *Sacred Lands Inventory*. The NAHC record search was negative for Native American resources in the immediate project area, and 14 tribes or knowledgeable individuals were recommended that could provide additional information. Letters soliciting additional information were sent to the 14 Native American individuals/groups recommended by the NAHC. No responses have been received as of this writing. The County of Kings has completed consultation with the Santa Rosa Rancheria Tachi Yokut Tribe pursuant to AB 52 (see section *4.18 Tribal Cultural Resources* for discussion).

Basin Research Associates has conducted archaeological field reviews within the Westlands Solar Park Master Plan Area, including the Aquamarine Project Site and Gen-Tie Corridor, from 2009 to 2018. No evidence of prehistoric or historically significant cultural resources was observed on the Aquamarine Project Site and Gen-Tie Corridor or vicinity during the field reviews.

Setting

Aquamarine Solar Facility and Gen-Tie Line

Native American Resources

Ethnography

Prehistoric occupation and use of the general area dates from perhaps as early as 12,000 years ago. The wetland environment of the nearby Tulare Lake would have provided a favorable environment for

prehistoric Native Americans due to the availability of resources such as fresh water, fish and large game. In the later period beginning about 1,500 years ago, subsistence began to focus on processing of acorns and other plant foods, with a decreased emphasis on hunting and fishing.

The project site was within the territory of the Southern Valley Yokuts tribe known as the *Tachi (Tache)*, whose territory extended from the north and west shores of Tulare Lake to the Kettleman Hills and foothills of the Coast Ranges. The *Tachi* village of *Waiu*, one of eight in Tachi territory, was located south of Lemoore along the west side of Mussel Slough where the present rancheria of Santa Rosa Indian Community is located. The location of the Santa Rosa Indian Community of the Santa Rosa Rancheria, California (a.k.a. Santa Rosa Rancheria Tachi Tribe) conforms to the former site of the *Tachi* village of *Waiu.* The community, a federally-recognized Indian tribe, is located approximately 7 miles east/northeast of the project site between Jersey and Kent Avenues, west of 17th Avenue. The "Santa Rosa Rancheria" is a designated State of California Ethnic site.

Prehistoric Archaeology

The literature search by Basin Research revealed that one prehistoric isolate (i.e., isolated artifact) had been previously recorded approximately 0.2 miles north of the northeast corner of the Aquamarine project site, as described below:

> P-16-000198 consists of an isolated basalt groundstone fragment that was recovered south of the Avenal Cutoff Road along the east side of unimproved agricultural road in the SE 1/4 of the SE 1/4 [corner] of Section 4 T20S R19E during monitoring of trenching for a natural gas pipeline. Because an isolated artifact does not constitute an archaeological site, the find was not eligible for listing on the California Register of Historical Resources.

Additional prehistoric resources have been recorded at locations from 5 to 12 miles south of the Aquamarine project site. All of these resources are located east of SR-41, along the western margins of the former Tulare Lake. These resources include five prehistoric sites (four of which included Native American remains), two combined prehistoric/historic-era sites, and 22 prehistoric isolates. None of these sites is listed on the State Office of Historic Preservation's *Archaeological Determinations of Eligibility* for Kings County.

No other prehistoric or combined prehistoric/historic-era sites or isolates have been recorded in the vicinity of the Aquamarine Solar Project and Gen-Tie Line. No National Register of Historic Places or California Register of Historical Resources eligible or listed historic properties/cultural resources, or traditional cultural places (TCPs) have been identified in or adjacent to the Aquamarine project site or Gen-Tie corridor.

The Native American Heritage Commission (NAHC) has indicated that a search of the sacred land file was negative for the presence of Native American resources in the immediate area of the Aquamarine site and Gen-Tie corridor.

Historic-Era Resources

No known Hispanic Period or American Period dwellings or other significant structures, features (e.g., adobe dwellings, or other structures, features, etc.) have been identified in or adjacent to the Aquamarine project site or Gen-Tie corridor. The field inventories and reviews conducted by Basin

Research Associates from 2009 to 2018 found no indications of surface or subsurface significant historic material on or adjacent to the Aquamarine site or Gen-Tie corridor.

One historic-era feature has been recorded in the Aquamarine Solar Project vicinity along the eastern site boundary in the northeast corner of the site. This feature is an electrical transmission line that was recorded in conjunction with the Henrietta Substation upgrade project. This feature has been determined to not be eligible for inclusion on either the National Register of Historic Places or California Register of Historical Resources. This feature is briefly described below:

> P-16-000136 consists of a portion of the Camden Junction-Henrietta and Henrietta-Tulare Lake (Line Number 702), a 31.55-mile 70 kV line between Camden Junction south to the Henrietta Substation and then south to the Tulare Lake Substation. The recorded portion of the transmission line runs parallel to a paved road (25th Avenue) from the Henrietta Substation south to Avenal Cutoff Road, and then follows an unimproved agricultural road to a point one mile south of Avenal Cutoff Road (on the east side of the unimproved agricultural road just inside the eastern boundary of the northern portion of the Aquamarine Solar Project site). The resource has been evaluated as not eligible for inclusion on the California or National registers.

No local, state or federal historically or architecturally significant structures, landmarks, or points of interest have been identified within or immediately adjacent to the Aquamarine project site or Gen-Tie corridor. No historic properties which have been listed, determined to be eligible or potentially eligible for inclusion on the National Register of Historic Places or the California Register of Historical Resources have been identified in or adjacent to the Aquamarine project site or Gen-Tie corridor.

Conclusions on Site Archaeology (Prehistoric and Historic)

Review of the archaeological and geo-archaeological data suggest a low potential for exposing subsurface archaeological materials within the project area. This conclusion by Basin Research Associates is based on the general absence of recorded prehistoric and historic archaeological sites within and/or immediately adjacent to the Aquamarine project site and Gen-Tie corridor; the lack of any archaeological discoveries for the past 100+ years within or adjacent to the Aquamarine project site and Gen-Tie corridor; and, the prior disturbance of the native sediments within the project area by agricultural plowing and ripping to a depth of at least three feet over the past 100+ years. In addition, a locational review of the very few recorded archaeological site information within one mile of the Aquamarine Solar Project and Gen-Tie Line indicates an occupation focus on the former shoreline and marsh areas of Tulare Lake rather than valley areas. All of these factors strongly suggest a low potential for the discovery of buried archaeological materials during subsurface disturbance during project construction although isolated prehistoric and historic finds are possible (Basin 2018).

Environmental Evaluation

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. The Aquamarine project site and Gen-Tie corridor include no historic properties determined to be eligible or potentially eligible for

inclusion on the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR). The only historic-era feature on the project site consists of a 70-kV electrical transmission line in the northeast corner of the Aquamarine site, which has been previously evaluated as not eligible for either the NRHP or the CRHR. According to the cultural resources report prepared by Basin Research Associates, there is a low potential for the discovery of significant subsurface materials from the historic era within the Aquamarine project site or Gen-Tie corridor, although it is possible that isolated historical materials may be encountered during subsurface excavation.

Construction activity could result in the inadvertent exposure of historical resources that could be eligible for inclusion on the CRHR. This potentially significant project impact to historic resources would be reduced to a *less-than-significant* level through the implementation of Mitigation Measure CR-1 below.

Mitigation Measure CR-1: Protection of Cultural Resources. *In order to avoid the potential for impacts to historic and prehistoric archaeological resources, the following measures shall be implemented, as necessary, in conjunction with the construction of each phase of the Aquamarine Solar Project and Gen-Tie Line:*

a. *Cultural Resources Alert on Project Plans: The project proponent shall note on any plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources.*

b. *Pre-Construction Briefing: The project proponent shall retain Santa Rosa Rancheria Cultural Staff to provide a pre-construction Cultural Sensitivity Training to construction staff regarding the discovery of cultural resources and the potential for discovery during ground disturbing activities, which will include information on potential cultural material finds and on the procedures to be enacted if resources are found.*

c. *Stop Work Near any Discovered Cultural Resources: The project proponent shall retain a professional archaeologist on an "on-call" basis during ground disturbing construction for the project to review, identify and evaluate cultural resources that may be inadvertently exposed during construction. Should previously unidentified cultural resources be discovered during construction of the project, the project proponent shall cease work within 100 feet of the resources, and Kings County Community Development Agency (CDA) shall be notified immediately. The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources under CEQA.*

d. *Mitigation for Discovered Cultural Resources: If the professional archaeologist determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource, he/she shall notify the project proponent and other appropriate parties of the evaluation and recommended mitigation measures to mitigate the impact to a less-than-significant level. Mitigation measures may include avoidance, preservation in-place, recordation, additional archaeological testing and data recovery, among other options. Treatment of any significant cultural resources shall be undertaken with the approval of the Kings County CDA. The archaeologist shall document the resources using DPR 523 forms and file said forms with the California Historical Resources Information System, Southern San Joaquin Valley Information Center. The resources shall be photo-documented and collected by the archaeologist for submittal to the Santa Rosa Rancheria's*

Cultural and Historical Preservation Department. The archaeologist shall be required to submit to the County for review and approval a report of the findings and method of curation or protection of the resources. Further grading or site work within the area of discovery shall not be allowed until the preceding steps have been taken.

e. *Native American Monitoring: Prior to any ground disturbance, the project proponent shall offer the Santa Rosa Rancheria Tachi Yokut Tribe the opportunity to provide a Native American Monitor during ground disturbing activities during both construction and decommissioning. Tribal participation would be dependent upon the availability and interest of the Tribe.*

f. *Disposition of Cultural Resources: Upon coordination with the Kings County Community Development Agency, any pre-historic archaeological artifacts recovered shall be donated to an appropriate Tribal custodian or a qualified scientific institution where they would be afforded applicable cultural resources laws and guidelines.*

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. The Aquamarine project site and Gen-Tie corridor include no known prehistoric archaeological resources determined eligible or potentially eligible for inclusion on the National Register of Historic Places or the California Register of Historical Resources. A previous archaeological field inventory of the Aquamarine project site recorded one prehistoric isolate (artifact) located 0.2 miles north of the northeast corner of the Aquamarine site; however, the isolated artifact is not considered a cultural "site" and therefore is not eligible for either the NRHP or the CRHR.

According to the cultural resources report prepared by Basin Research Associates, there is a low potential for the discovery of significant subsurface cultural materials within the Aquamarine project site or Gen-Tie corridor, although isolated prehistoric finds are possible. Construction operations in areas of native soil could result in the inadvertent exposure of buried prehistoric archaeological materials that could be eligible for inclusion on the CRHR (PRC Section 5024.1) and/or meet the definition of a unique archeological resource as defined in Section 21083.2 of the Public Resources Code (PRC). This potential impact to cultural resources would be reduced to a *less-than-significant* level through the implementation of Mitigation Measure CR-1 above.

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. According to the cultural resources report by Basin Research Associates, no human burials have been recorded on the project site or immediate vicinity. The nearest recorded human remains were found at four sites along or near the

former Tulare Lake shoreline, with the nearest recorded burials found approximately 1.0 miles southeast of the Aquamarine project site, and the remaining three burials located between 7 and 11 miles south of the Aquamarine site and from 5 to 8 miles south of the Gen-Tie corridor. Although considered unlikely, it is possible that human remains could be buried within the Aquamarine project site and Gen-Tie corridor.

Subsurface excavation for the Aquamarine Solar Project and Gen-Tie Line could potentially result in the disturbance of buried human remains. This potential impact would be reduced to *less-than-significant* levels through implementation of Mitigation Measure CR-2 below.

Mitigation Measure CR-2: Protection of Buried Human Remains. *In order to avoid the potential for impacts to buried human remains, the following measures shall be implemented, as necessary, in conjunction with the construction of the Aquamarine Solar Project and Gen-Tie Line:*

a. Pursuant to State Health and Safety Code Section 7050.5(e) and Public Resources Code Section 5097.98, if human bone or bone of unknown origin is found at any time during on- or off-site construction, all work shall stop in the vicinity of the find and the Kings County Coroner shall be notified immediately. If the remains are determined to be Native American, the Coroner shall notify the California State Native American Heritage Commission (NAHC), who shall identify the person believed to be the Most Likely Descendant (MLD. The project proponent and MLD, with the assistance of the archaeologist, shall make all reasonable efforts to develop an agreement for the treatment of human remains and associated or unassociated funerary objects with appropriate dignity (CEQA Guidelines Sec. 15064.5(d)). The agreed upon treatment shall address the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. California Public Resources Code allows 48 hours for the MLD to make their wishes known to the landowner after being granted access to the site. If the MLD and the other parties do not agree on the reburial method, the project will follow Public Resources Code Section 5097.98(e) which states that ". . . the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

b. Any findings shall be submitted by the archaeologist in a professional report submitted to the project applicant, the MLD, the Kings County Community Development Agency, and the California Historical Resources Information System, Southern San Joaquin Valley Information Center.

REFERENCES – CULTURAL RESOURCES

Basin 2018 — Basin Research Associates. 2018. *Cultural Resources Assessment Report – Aquamarine Solar Project and Gen-Tie Line, Kings and Fresno Counties, California*. December.
[Cultural Resources report is kept administratively confidential by Kings County Community Development Agency per Government Code Section 6254, subdivision (r) and Section 6452.10.]

4.6 ENERGY

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	■	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	■

Consistent with Public Resources Code Section 21100(b)(3), this impact analysis evaluates the potential for the project to result in a substantial increase in energy demand and/or wasteful use of energy during project construction, operation and maintenance, and decommissioning.

Environmental Evaluation

a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Aquamarine Solar Project

Less-than-Significant Impact. The construction of the Aquamarine Solar Project would involve the consumption of fuels for the use of construction tools and equipment, haul trips, and vehicle trips generated by construction workers traveling to and from the project site. Energy would also be used in the manufacture of the solar modules and associated equipment, although the solar modules and other array equipment would be recyclable. As required by CALGreen, 65 percent of construction and demolition waste would be diverted from the waste stream. The efficient use of fuel during construction would occur through implementation of the San Joaquin Valley Air Pollution Control District's requirement for clean fleet equipment to minimize emissions under Rule 9510 (ISR) which would also indirectly result in greater fuel efficiency. The energy efficiency of fuel consumed by commuting workers and delivery vehicles would be ensured through federal fuel efficiency standards. In addition, the project would be constructed in accordance with the California Building Standards Code and Energy Efficiency Standards, as enforced through plan review and site inspections by the County Building Official.

Operationally, the main objective of the Aquamarine Solar Project is to generate renewable solar energy in order to provide for the reduced statewide reliance on non-renewable fossil fueled generation. The operation of the solar facility would allow for the decommissioning of equivalent generation from a natural gas fired power plant. As discussed in section 4.8 *Greenhouse Gas Emissions*, the total carbon emissions (as proxy for energy consumption) associated with the Aquamarine Solar Project would be 99 percent less than carbon emissions resulting from a

conventional gas powered plant. The project would also result in energy saved that would otherwise be consumed in transporting fossil fuels to a fossil-fueled power plant. The project would consume a relatively small amount of electricity to operate lights and equipment, but this energy consumption would be negligible compared to the clean energy produced by the project. Since the small amount of electricity consumed during project construction, operation, and decommissioning would be greatly offset by the generation of renewable energy by the project, the energy demand from the Aquamarine Solar Project would not constitute a wasteful, inefficient, or unnecessary use of energy, and the impact would be *less than significant*.

Gen-Tie Line

Less-than-Significant Impact. The construction of the Gen-Tie Line would involve the consumption of fuels for vehicles and equipment. Energy would also be used in the manufacture of transmission towers and electrical cables, some of which would be recyclable. Construction materials would also be required to be recycled to the extent practicable pursuant to the applicable utility construction standards.

Operationally, the main objective of the Gen-Tie Line is to deliver the renewable solar energy generated by the Aquamarine Solar Project to the state electrical grid. This would help achieve the statewide goal of converting from fossil-fueled power generation to renewable power generation. Thus the relatively small amount of energy consumed in construction of the Gen-Tie Line would be off-set by the critical role of the gen-tie facility in enabling the delivery of the renewable solar generation from the Aquamarine Solar Project to the state electrical grid. Thus the minimal energy demand from the Gen-Tie Line would not constitute a wasteful, inefficient, or unnecessary use of energy, and the impact would be *less than significant*.

In summary, the Aquamarine Solar Project and Gen-Tie Line would not have an adverse effect in terms of energy conservation, and would have a substantial beneficial effect by way of implementing the statewide goal of conversion from fossil-fueled power generation to renewable power generation.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Aquamarine Solar Project and Gen-Tie Line

No Impact. At the local level, there are several policies contained in the *2035 Kings County General Plan* which directly address renewable energy or energy efficiency. In the Resource Conservation Element, RC Policies G1.2.1 through G1.2.6 promote the use of renewable energy sources such as solar, wind, and biomass projects, and provide guidance for their appropriate placement and project review. RC Policies G1.3.1 through G1.3.4 address energy conservation and project design measures for reducing energy demand (Kings County 2010b). The Aquamarine Solar Project and Gen-Tie Line would advance the implementation of these policies by providing a new source of renewable energy.

At the State level, there are numerous plans, policies, and regulations that directly and indirectly address renewable energy and energy efficiency. For energy efficiency in building construction, the

applicable energy conservation requirements are contained in the California Building Standards Code and Energy Efficiency Standards, which have been incorporated into the Kings County Building Code. The Aquamarine project would incorporate the applicable energy efficiency standards in its construction, as enforced by the County Building Official. Therefore, the determination of significance under this criterion is whether the project would hinder or delay implementation of the statewide GHG reduction targets set forth in AB 32.

The State's primary mandate for renewable energy is embodied by AB 32 – The California Global Warming Solutions Act, which is implemented through its Scoping Plan. The 2017 Climate Change Scoping Plan adopted by the California Air Resources Board outlines the strategies for achieving the emissions reduction target mandated in AB 32. One of the key strategies is the Renewables Portfolio Standard (RPS), which now requires all electric utilities in California to include a minimum of 60 percent renewable generation sources in their overall energy mix by 2030 (CARB 2017). As a solar photovoltaic generating facility and supporting gen-tie, the Aquamarine Solar Project and Gen-Tie Line will help increase the proportion of renewables in the statewide energy portfolio, thereby furthering the implementation of RPS by the target year instead of obstructing its implementation. The addition of the project's solar generation to the state's electrical supply will help facilitate the retirement of existing older fossil-fueled generation plants, thereby avoiding or offsetting those sources of GHG emissions. Therefore, the Aquamarine Solar Project and Gen-Tie Line would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, thus would have *no impact* in this regard.

REFERENCES – ENERGY

CARB 2017 — California Air Resources Board (CARB). 2017. *The 2017 Climate Change Scoping Plan – The Strategy for Achieving California's 2030 Greenhouse Gas Target*. October 27. https://www.arb.ca.gov/cc/scopingplan/revised2017spu.pdf

Kings County 2010b — Kings County. 2010. *2035 Kings County General Plan – Resource Conservation Element*. Adopted January 26, 2010. http://www.countyofkings.com/home/showdocument?id=3112

4.7 GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	■
ii) Strong seismic ground shaking?	☐	☐	■	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	■	☐
iv) Landslides?	☐	☐	☐	■
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	■	☐
c) 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?	☐	☐	■	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating direct or indirect risks to life or property?	☐	■	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	■
f) Directly or indirectly destroy a unique paleontological resource or site of unique geologic feature?	☐	■	☐	☐

Setting

Aquamarine Solar Project and Gen-Tie Line

Site Geology

The Aquamarine project site and Gen-Tie corridor are located in the Great Valley Geomorphic Province, a topographic and structural basin bounded on the east by the Sierra Nevada and on the west by the Coast Ranges. The Sierra Nevada are part of a fault block which dips gently to the southwest which forms the bedrock beneath the valley. This basement complex is composed of igneous and metamorphic rocks of pre-Tertiary age. These are in turn overlain by Quaternary period alluvium, including material from the Pleistocene Epoch (about 2.6 Million to about 10,000 years ago), which is covered by layer of Holocene Epoch (about 10,000 years ago to present) of varying thickness.

Tectonics and Seismicity

There are no Alquist-Priolo Earthquake Fault Zones mapped in the vicinity of the Aquamarine project site or the Gen-Tie corridor (CGS 2014). However, there are several active faults in the Coast Ranges to the

west, including the San Andreas Fault Zone, the Nunez Fault Zone, and the Great Valley Fault System. The nearest segment of the San Andreas fault is located about 35 miles southwest of the Aquamarine project site and it is estimated to be capable of producing a magnitude 7.7 earthquake along the nearest segments to the project area.

The Nunez Fault Zone, a 3-mile long fault zone located 2 miles northwest of Coalinga, was the epicenter of the 6.2 magnitude 1983 Coalinga earthquake. The Nunez fault is a designated Alquist-Priolo Earthquake Fault Zone and is located about 27 miles west of the Aquamarine project site and 23 miles west of the Kings County portion of the gen-tie corridor at the nearest points.

The Great Valley Fault System, which runs parallel to and east of the San Andreas Fault zone, is composed of blind thrust faults, which do not intersect the ground surface but can cause significant shaking and ground deformation. The nearest segment of this fault system is the Kettleman Hills segment which is located approximately 22 miles southwest of the Aquamarine project site and 18 miles from the Gen-Tie corridor at the nearest points. The 6.5 magnitude Coalinga earthquake in 1983 (25 miles west) and the 6.1 magnitude Kettleman Hills earthquake in 1985 (17 miles southwest) occurred within this fault complex (Kings County 2010e).

Soils

The soils on the Aquamarine site consist almost entirely of Lethent clay loam, with a small area along the western boundary consisting of Calflax clay loam, saline-sodic. These soils have very similar characteristics and are both described as very deep, moderately well-drained, saline-alkali soils. The shrink-swell potential of these clayey soils is moderate to high, runoff is slow to very slow, and hazard to erosion is slight. Limitations include very low to moderately low permeability and moderate to severe shrink-swell (expansion) potential. The saline-alkali condition of the soils causes high corrosivity to steel and concrete (NRCS 1986, 2006).

The soils along the 8.7-mile Kings County portion of the Gen-Tie corridor consist of Lethent clay loam (61%), Westhaven clay loam (30%), and Westhaven loam (9%). As discussed above, the Lethent and Westhaven clay loams have moderate permeability, moderate shrink-swell potential, slight erosion hazard, and are highly corrosive to uncoated steel and moderately corrosive to concrete. The Westhaven loam has moderate permeability, moderate shrink-swell potential, slight erosion hazard, and is highly corrosive to uncoated steel and moderately corrosive to concrete (NRCS 1986).

[Note: A detailed description of geological and soils conditions and corresponding regulatory context applicable to the Aquamarine Project and Gen-Tie Line is contained in the Draft Program EIR on the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan, which is incorporated into this document by reference pursuant to Section 15150 of the State CEQA Guidelines (WWD 2017b).]

Paleontological Resources

Paleontological resources comprise fossils – the remains or traces of once-living organisms preserved in sedimentary deposits – together with the geologic context in which they occur. Fossils are scientifically important as they provide the only available direct evidence of the anatomy, geographic distribution, and paleoecology of organisms of the past. Significant paleontological resources may include vertebrate fossils and their associated taphonomic (fossilization) and environmental indicators; invertebrate fossils; and/or plant fossils.

The surface soils of western Kings County are underlain by alluvium deposited during the Quaternary period (approximately 2.6 million years to present). Quaternary alluvium is further divided into a number of subunits, including the following units that occur in the general project vicinity: Quaternary fan deposits (Qf), formed from materials eroded from the Coast Ranges to the west and deposited by streams in alluvial fans; Quaternary lake deposits (Ql), consisting of materials deposited on the lakebed of former Tulare Lake to the east and southeast; and Quaternary basin deposits (Qb), consisting of materials deposited by Kings River flows and overbank flood events. Quaternary fan and lake deposits are considered to have a high sensitivity for paleontological resources, while Quaternary basin deposits have a low paleontological sensitivity (CHSRA 2012). Most of the Aquamarine project site is mapped within an area of Quaternary basin deposits, except at the extreme eastern edge of the site where about 50 acres are mapped as Quaternary lake deposits. Most of the Gen-Tie corridor is also mapped within an area of Quaternary basin deposits, except for the western 2.1 miles of the corridor which are mapped as Quaternary fan deposits (CGS 1965).

Most of the Aquamarine project site and most of the Gen-Tie corridor are located within the area mapped as Quaternary basin deposits, which indicates a low potential for buried fossils. However, significant fossil discoveries have occurred in Quaternary basin deposits elsewhere in the region, so there is some potential for fossils to occur in same Quaternary unit in the project area. A relatively small portion of the Aquamarine site is mapped as Quaternary lake deposits, and a minor portion of the Gen-Tie corridor is mapped as Quaternary fan deposits. As noted above, both the Quaternary fan and lake deposits are considered to have a high sensitivity for paleontological resources.

On a temporal scale, the Quaternary period is divided into two epochs or ages, including the Pleistocene Epoch (about 2.6 million to 10,000 years ago) and the more recent Holocene Epoch (about 10,000 years ago to present). The Pleistocene Epoch is informally termed the Ice Age, and this is the depositional period which yields vertebrate fossils. The Holocene deposits, which comprise more recent layers that were deposited on top of the Pleistocene material, yield few if any vertebrate fossils and thus have a low paleontological sensitivity. However, the thickness of the Holocene layer covering the paleontologically sensitive Pleistocene (or older Quaternary) alluvium is highly variable, so it is often difficult to determine the depth at which the older Quaternary alluvium occurs at a given location. It is useful to consider Caltrans' experience on this issue, given its involvement with numerous construction projects involving deep excavations in Quaternary sediments in the San Joaquin Valley. Caltrans has found that while low sensitivity Holocene materials can cover older fossil-bearing alluvium to substantial depths, Caltrans' projects have encountered sensitive fossils at depths as shallow as 5 to 8 feet at sites underlain by Quaternary alluvium (Caltrans 2018). There are no records or reports of known vertebrate fossil localities within the Aquamarine Solar Project and Gen-Tie Line area (Basin Research 2018). Although the depth of the Holocene layer at the project site is unknown, lack of reported fossils in the area suggest that fossils are not common, at least in the upper portions of the local sedimentary deposits. Based on the information presented above, it highly unlikely that fossils are present on the Aquamarine project site or Gen-Tie corridor at depths shallower than 5 feet below the ground surface.

There are several major fossil localities in western Kings County, including the Witt site located 15 miles south/southeast of the Aquamarine project site on the southwest shoreline of former Tulare Lake. The Witt site, which is associated within Quaternary lake deposits, has yielded numerous vertebrate species including mammoth, camel, horse, bison, dire wolf, and many fish species (Gobalet 1993).

Other well-known fossil beds occur in the Kettleman Hills, located approximately 15 miles the southwest of the Aquamarine project site and 7 miles southwest of the Gen-Tie corridor, beyond the western margins of the San Joaquin Valley where the deep alluvium has transitioned to shallow soils covering bedrock outcrops. The fossil-bearing rock formations include geologic deposits of the Etchegoin, San Joaquin, and Tulare Formations which date from the Pliocene age (roughly 4.5 to 2.0 million years old).

Environmental Evaluation

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

Aquamarine Solar Project and Gen-Tie Line

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?

No Impact. The Aquamarine project site and gen-tie corridor ("project area") is not included in an earthquake fault zone designated by the California Division of Mines and Geology pursuant to the Alquist-Priolo Act. In addition, the Health and Safety Element of the 2035 Kings County General Plan states" "[t]he County has no known major fault systems within its territory" (Kings County 2010e). Since there are no known earthquake faults on or near the project area, there are *no impacts* associated with the Aquamarine Project or Gen-Tie Line relative to surface rupture of an earthquake fault.

ii) Strong seismic ground shaking?

Less-than-Significant Impact. The project area is located in one of the more seismically active areas of California, with several major faults within a 50-mile radius capable of generating maximum credible earthquakes of 6.5 Richter Magnitude or greater. The estimated peak horizontal ground acceleration within the project area during an earthquake is 0.20 - 0.40g (g = force of gravity) (USGS 2014).

Groundshaking resulting from a large or moderate earthquake centered on faults in the western foothills would cause dynamic loading resulting in stress to structures at the Aquamarine project site and Gen-Tie corridor. However, structures designed and built in accordance with the California Building Code are expected to respond well. The CBC structural design standards provide for high degree of seismic strength and resistance to lateral forces (strong shaking) in order to minimize risks to public safety and damage to property. The California Building Code has been adopted as the Kings County Building Code, which is implemented and enforced by the Kings County Building Official and Building Inspectors through building permit reviews, approvals, inspections, and final sign offs.

The following passage from page 8 of the "Health and Safety Element" of the *2035 Kings County General Plan* is relevant to this discussion:

> "Damage and injury resulting from geologic hazards can be reduced to acceptable levels through zoning and building permit review procedures and construction standards. New construction conforming to the standards of the California Building Code (CBC) will provide adequate protection."

In addition, the Gen-Tie corridor would be subject to geotechnical investigations to evaluate ground accelerations for design of all planned transmission structures to ensure conformance with applicable design standards for the anticipated seismic forces.

In summary, the potentially significant impacts due to groundshaking at the Aquamarine project would be reduced to *less-than-significant* levels through implementation of the applicable seismic design standards of the California Building Code, and potential impacts to the Gen-Tie Line would be reduced to *less-than-significant* levels through implementation of geotechnical recommendations for seismic design of the Gen-Tie Line, as enforced by the Kings County Building Division.

iii) Seismic-related ground failure, including liquefaction?

Less-than-Significant Impact. Seismic ground failures can include liquefaction and seismically-induced differential settlement, as discussed below.

Soil liquefaction is the phenomenon in which a saturated, cohesionless soil loses structural strength during an earthquake as a result of induced shearing strains, which essentially transforms the soil to a liquid state resulting in ground failure or surface deformation. Liquefaction can result in total and differential settlement of structures. Conditions required for liquefaction typically include fine, well-sorted, loose sandy soil, high groundwater, higher intensity earthquakes, and particularly long duration of ground shaking.

No regulatory mapping of liquefaction zones has been prepared by the California Geological Survey for the project area, with the nearest such mapping completed for Santa Clara County (CGS 2014). The Lethent and Calflax soils that cover the Aquamarine project site have high clay content, indicating a low susceptibility to liquefaction. The nearest groundwater within the Aquamarine project site was most recently (April 2017) mapped at 5-10 feet below the ground surface (WWD 2017). In the presence of the clayey soils on the Aquamarine site, the relatively high groundwater conditions would not be sufficient to induce liquefaction during a seismic event.

Along the eastern 5.3 miles of the Gen-Tie corridor, soils consist of Lethent clay loam and Westhaven clay loam, saline-alkali; and in the western 2.4 miles the soils consist of Westhaven loam. Groundwater levels along the Gen-Tie corridor range from a high of 15 feet below ground surface in the east to a low of 25 feet below ground surface at the Fresno County line (WWD 2017). The high clay content of the Lethent and Westhaven clay loam soils indicate a low susceptibility to liquefaction. The Westhaven clay loams in the western portion of the gen-tie corridor would generally be more susceptible to liquefaction, but the water table is at 20 to 25 feet below the ground surface in this area, which would preclude saturated soil conditions necessary for liquefaction to occur.

In addition, the "Health and Safety Element" of the *2035 Kings County General Plan*, it states "[t]he risk and danger of liquefaction and subsidence occurring within the County is considered to be minimal" (Kings County 2010e). The potential impacts to the Aquamarine Solar Project and Gen-Tie Line due to liquefaction would be *less than significant*.

Seismic settlement can occur when saturated and unsaturated granular soils become rearranged during groundshaking resulting in a volume reduction and surface deformation. The magnitude of seismic settlement is a function of the relative density of the soil and the magnitude of cyclic shear stress caused by seismic ground motion. Seismic settlement has the greatest potential to occur in locations where loose granular materials such as sandy soils are present above the groundwater table. The relatively dense clay soil that typifies the Lethent, Calflax, and Westhaven clay loams that cover the Aquamarine project site and most of the Gen-Tie corridor, are associated with a low potential for surface deformation resulting from seismic settlement (CEC 2001). The Westhaven loams along the western 2.4 miles of the Gen-Tie corridor would have a somewhat higher potential for surface deformation; however, the potential for seismic settlement would be addressed through geotechnical studies which would identify soil engineering specifications to ensure that tower footings would be designed meet applicable standards to prevent settlements. As such, the potential impacts to the Aquamarine Solar Project and Gen-Tie Line due to seismic settlement would be *less than significant*.

iv) Landslides?

No Impact. No regulatory mapping of landslide zones has been prepared by the California Geological Survey for the project area, with the nearest such mapping completed for Santa Clara County (CGS 2014). The project area is not mapped as lying within a landslide hazard area by USGS landslide mapping which shows the nearest landslide areas in the foothills of the Coast Ranges to the west (USGS 1997). In addition, the "Health and Safety Element" of the *2035 Kings County General Plan* indicates that project area is defined has having a "low" susceptibility to landslides (Kings County 2010e). The nearly level terrain of project area has a very low potential for landslides. As such, the Aquamarine Solar Project and Gen-Tie Line are associated with *no impact* relative to landslides.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact. The Lethent and Calflax clay loam soils covering the Aquamarine site, as well as the Lethent and Westhaven clay loams and Westhaven loams that characterize the Gen-Tie corridor, all have slow to very slow runoff potential with a correspondingly slight hazard of water erosion (NRCS 1986, 2006). However, the seasonal high wind conditions (typically from March to June) results in high potential for wind erosion within the project area (Kings County 2010b).

The grading, excavation, vegetation removal, and ground disturbance during construction would expose the soil to potential erosion from wind and rain. As described in section *2.2 Project Description*, existing vegetation within a given area of the Aquamarine project would only be removed when that area is scheduled for installation of solar arrays. Existing topsoil would not be removed, and once the installation of solar arrays in a given area is complete, the affected area would be revegetated with a native seed mix. For the Gen-Tie Line, ground disturbance would be largely confined to the monopole sites, which would involve less that one acre of temporary disturbance at each monopole site. In order to prevent erosion caused by stormwater runoff, soil stabilization and erosion control measures would be employed throughout the grading and construction of each increment of solar development and gen-tie construction, as specified in Mitigation Measure HYD-1 (see section *4.10. Hydrology and Water Quality,* item 'c').

The specific erosion controls to be implemented at the Aquamarine project site and within the Gen-Tie corridor will be specified in the Storm Water Pollution Prevention Plans (SWPPPs), as required for all projects over 1 acre in size by the State Water Resources Control Board. The SWPPPs for the Aquamarine and Gen-Tie projects will specify Best Management Practices (BMPs) such as stormwater runoff control and hazardous waste management measures, and will include monitoring and reporting procedures.

Typical erosion control measures include: diversion of runoff away from disturbed areas, protective measures for sensitive areas, mulching for soil stabilization, straw-bale barriers, and siltation or sediment ponds. Specific BMPs for the Aquamarine and Gen-Tie projects will be determined during the final engineering design stages for each project. Approval of each respective project SWPPP by the Regional Water Quality Control Board will be obtained prior to initiation of ground disturbing activities for each phase. Regional Board staff is responsible for inspections of construction sites to ensure the effectiveness of BMPs specified in the SWPPPs.

With the implementation of the measures specified in the SWPPPs, the potential for the Aquamarine Solar Project and Gen-Tie Line to result in erosion impacts would be reduced to *less-than-significant* levels.

[Note: The potential erosion and siltation impacts are discussed in greater detail in section *4.10. Hydrology and Water Quality*.]

c) Would the project 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?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact. As discussed above, the Aquamarine project site and Gen-Tie corridor are not susceptible to landslides, liquefaction, or seismic settlement. The potential for lateral spreading and land subsidence is discussed below.

Lateral spreading (or liquefaction-induced lateral spreading) can occur with seismic ground shaking on slopes where saturated soils liquefy and flow toward the open slope face. The lands of the Aquamarine project site and Gen-Tie corridor are essentially flat and do not include significant slopes with the exception of the channel banks of the irrigation canals and drainage ditches that run through the Aquamarine site and alongside the portion of the Gen-Tie corridor that runs along the 25th Avenue alignment. These channels are periodically cleared of vegetation to maintain their hydraulic capacity, resulting in exposed earth channel faces with about 2:1 slopes. However, the clay soils of the project area are not susceptible to liquefaction, so the similarly stiff clay soils along the open slope faces of the channels would likewise not be subject to lateral spreading resulting from liquefied soils. (At the western end of the Gen-Tie corridor where the soil unit is Westhaven loam, there are no open channels and thus there is no potential for lateral spreading in this area.) In summary, the potential impact from lateral spreading on or near the Aquamarine project site or the Gen-Tie corridor would be *less than significant*.

Ground subsidence is typically caused when overdrafts of a groundwater basin reduces the upward hydraulic pressure that supports the overlying land surface, resulting in consolidation/settlement of the underlying soils. Large areas of the San Joaquin Valley, including the project area, have been subject to subsidence from groundwater use for a number of years. Mapping by the U.S. Bureau of Reclamation shows that from the years 1926 to 1970, the land at the Aquamarine project site subsided by more than 10 feet (USBR 2011). From 2007 to 2011, the land at the Aquamarine site subsided between 0.5 and 1.0 feet (CWF 2014). As discussed in section *4.10. Hydrology and Water Quality*, groundwater pumping in the area can exceed the safe yield of the groundwater basin during years when severe curtailment in surface water deliveries from the Central Valley Project necessitates increased pumping of groundwater to make up for reductions in imported supplies. The overpumping of groundwater and resulting subsidence is the cumulative result of water withdrawals from many agricultural wells. As discussed in section *4.10. Hydrology and Water Quality*, the Aquamarine Solar Project would use a small fraction of the groundwater that is typically used for agricultural irrigation for the same area of land. Therefore, the Aquamarine project would have a beneficial impact in that it would help alleviate the ongoing cumulative subsidence impacts by causing a reduction in overall groundwater use in the valley. The Gen-Tie Line would require very little water during construction and negligible amounts of water during operation. Therefore, the Aquamarine Solar Project and Gen-Tie Line would have *no adverse impact* in terms of land subsidence.

d) Would the project 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?

Aquamarine Solar Project

Less-than-Significant Impact with Mitigation Incorporated. Expansive soils are typically associated with fine-grained clayey soils that have the potential to shrink and swell during seasonal wetting and drying cycles. The ability of clayey soil to change volume with variations in moisture content can result in uplift or cracking to foundation elements or other rigid structures such as slabs-on-grade, rigid pavements, or other slabs or hardscape founded on these soils. The Lethent and Calflax clay loam soils covering the Aquamarine project site have a moderate to high shrink-swell potential (NRCS 1986, 2006). Figure HS-4 of the *2035 Kings County General Plan* "Health and Safety Element" also identifies the project site as having expansive soils (Kings County 2010e). As such, there is a potential for damage to project pads and foundations as a result of soils expansion beneath these structures. In order to reduce the potential impacts from soils expansion to less-than-significant levels, the following mitigation measure would be implemented in conjunction with the Aquamarine project.

> ***Mitigation Measure GEO-1a: Expansive Soils within Aquamarine Project Site.*** *Prior to the issuance of the first building permit for each phase of the Aquamarine Solar Project, the applicant shall retain a qualified registered civil engineer to prepare a preliminary soils report, based on soil borings or excavations, to determine the potential for soils expansion and to prepare recommendations for corrective actions to mitigate potential damage to project structures due to potential soils expansion. The preliminary soils report shall be submitted to Kings County Community Development Agency Building Division for review and approval. The potential damage from soils expansion can be reduced by one or more of several alternative engineering measures, as recommended by the registered civil engineer. These measures could include:*

overexcavation and replacement with non-expansive soils; extending foundations below the zone of shrink and swell; chemically treating the soils with quicklime or cement; or foundation design measures. The corrective measures specified by would become conditions of Building Permit approval and would be subject to inspection and approval by the Kings County Building Official.

Although the entire Aquamarine site is mapped as being underlain with expansive soils, there is potential for variability of expansiveness of the soils depending on location within the site. In addition, the project facilities that would be most subject to damage from soils expansion would be equipment pads and foundations. Since the precise locations of the equipment pads will not be determined until the final engineering design stage, the soil borings and/or excavations required to determine the soils expansion characteristics at those sites, as well as the recommendations for appropriate corrective actions to be undertaken at those sites, must be made in conjunction with the final engineering design for the project. The final engineering design for the project will take place after approval of the Conditional Use Permit and prior to issuance of the Building Permits for the project. With the implementation of Mitigation Measure GEO-1, the potential risks to life or property at the Aquamarine Solar Project due to potential soils expansion would be *less than significant*.

Gen-Tie Line

The soils along approximately 90 percent of the Kings County portion of the Gen-Tie corridor consist of Lethent, Calfax, or Westhaven clay loams, all of which are moderately to highly susceptible to soils expansion. Therefore, the potential hazard to structures from expansive soil conditions represents a *potentially significant impact*. With implementation of Mitigation Measure GEO-1b below, the potential impact at the Gen-Tie Line due to potential soils expansion would be reduced to *less than significant*.

Mitigation Measure GEO-1b: Expansive Soils within Gen-Tie Corridor. *Prior to final project design for the Gen-Tie Line, the project proponent shall retain a qualified geotechnical engineer to undertake a soils investigation to determine the potential for soils expansion within the Gen-Tie corridor and to prepare recommendations and foundation design specifications to mitigate potential damage to project structures due to soils expansion.*

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

Aquamarine Solar Project

Less-than-Significant Impact. The Aquamarine Solar Project will utilize an on-site septic tanks and leachfields for disposal of wastewater associated with the O&M building. Since the project site is located in an area with a perched water table, it is designated by Kings County as an area requiring engineered septic systems. As such, the septic and leachfield system at the Aquamarine project will be designed and constructed as specified by a qualified registered professional engineer, and subject to approval of the Kings County Building Official, which would ensure effective functioning of the septic and leachfield system and avoid impacts to groundwater quality. Therefore, Aquamarine

project would result in *a less-than-significant impact* in terms of capability of the site soils to adequately support septic systems.

Gen-Tie Line

No Impact. The Gen-Tie line would not require any permanent wastewater facilities. As such, the Gen-Tie Line would result in *no impact* in terms of capability of the site soils to adequately support septic systems.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. There is a very low potential for paleontological resources to be present within the recent alluvium that characterizes the surface material of the Aquamarine project site and Gen-Tie corridor, because these sediments are too recent to preserve significant fossils. There is a greater potential for paleontological resources to be present in the older alluvium that underlies the surface alluvium at depth, although the precise depth to older alluvium in the project area is unknown. Based on the shallowest depths at which fossils have been found in similar Quaternary sediments in the region, there is a potential for the discovery of fossils if excavations penetrate below 5 feet. Most excavations for the Aquamarine Solar Project will involve trenching for electrical cable which would involve trenching to a depth of 3 feet, or 4 feet at most. Some project elements, such as deeper utility lines, may require excavations deeper than 5 feet, and borings for monopole footings in the Gen-Tie Line would extend as deep as 20 feet or more, which could potentially disturb or destroy important fossils. The potential impact to paleontological resources would be reduced to a *less-than-significant* level through implementation of Mitigation Measure GEO-1 below.

There are no unique geologic features which could be adversely affected by the Aquamarine Solar Project or Gen-Tie Line.

Mitigation Measure GEO-2: Protection of Paleontological Resources. *In order to avoid the potential for impacts to paleontological resources, the following measures shall be implemented, as necessary, in conjunction with the construction of each phase of the Aquamarine Solar Project and Gen-Tie Line:*

a. If paleontological resources are discovered during excavation activities at the project site, work within 100 feet of the find shall cease, and a qualified professional paleontologist shall be retained to evaluate the significance of the resources and make recommendations regarding the treatment, recovery, and curation of the resources, as appropriate. Treatment of any significant paleontological resources shall be undertaken with the approval of the Kings County CDA.

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4.8 GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant effect on the environment?	☐	☐	■	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	■

Setting

The accumulation of greenhouses gases (GHGs) in the atmosphere has been determined to be a causative factor in climate change. Greenhouse gases trap heat in the atmosphere, which in turn heats the surface of the earth. The increase in the average temperature of the atmosphere near the earth's surface is associated with significant changes in global climate patterns. Potential impacts of global warming include a rising sea levels, reductions in Sierra snowpack, increase in extreme weather events, increased risk of large wildfires, and adverse changes to marine and terrestrial ecosystems.

Some GHGs are naturally occurring and are emitted through natural processes, while others are emitted solely from human activities. The predominant source of non-natural GHG emissions is the use of fossil fuels which produces carbon dioxide (CO_2) as a byproduct of combustion. Other GHGs include methane (CH_4), nitrous oxide (N_2O), hydroflourocarbons, perfluorocarbons, and sulfur hexafluoride.

In an effort to avert the consequences of climate change, the California State Legislature enacted the California Global Warming Solutions Act (AB 32) in 2006. AB 32 established a state goal of reducing GHG emissions to 1990 levels by 2020 (a reduction of approximately 25 percent from forecast emissions levels), and required the California Air Resources Board (CARB) to establish a comprehensive program to implement this goal. In 2016, the legislature passed SB 32 which extended the goals of AB 32 and set a 2030 goal of reducing 2030 emissions by 40 percent from 2020 levels.

One of the key implementation programs is the Renewables Portfolio Standard (RPS) which mandates that renewable generation sources comprise at least 33 percent of electrical utilities' total power generation by 2020. Qualifying renewable generation sources include solar, wind, small hydro, geothermal, and biomass. In September 2018, Governor Brown signed SB 100, which updated the required renewables content of electricity generation to 50 percent by 2025 and 60 percent by 2030, and puts California on the path to implement a zero-carbon electricity grid by 2045.

A comprehensive description of the GHG setting and regulatory context of the Aquamarine Solar Project area is provided in the Draft PEIR on the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan, which is incorporated into this document by reference. The description of the overall GHG setting is found on pages 3.3-14 through 3.3-15 of the PEIR (WWD 2017b).

Environmental Evaluation

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant effect on the environment?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact. The proposed project would generate greenhouse gas (GHG) emissions through direct consumption of fossil fuels, primarily related to construction, traffic generation, and facility maintenance. The GHG emissions resulting from both project construction and operation were estimated by Illingworth & Rodkin using the CalEEMod model (see Appendix B of this document). The estimated emissions for both the Aquamarine Solar Project and Gen-Tie Line are presented in Table 9. As shown in Table 9, annual average project GHG emissions would be the equivalent of approximately 959 Metric Tons per year. Since the operation of the solar facility itself would result in zero GHG emissions, the relatively small amount of project GHG emissions results largely from the initial construction activity, along with the incidental maintenance activity during project operation.

TABLE 9

ESTIMATED PROJECT GREENHOUSE GAS EMISSIONS

Project	Construction and Decommissioning Emissions ($MTCO_2e$)[1]			Annual Emissions ($MTCO_2e$)		
	Construction Emissions (Total)	Decommissioning Emissions (Total)[2]	Total Construction/ Decommissioning Emissions	Construction/ Decommissioning (Amortized)[3]	Project Operation	Total Annual Emissions
Aquamarine Solar	7,652	7,652	15,304	612.16	291.73	903.89
Gen-Tie (Kings Co.)	1,384	NA	1,384	55.36	0	55.36
Totals	9,036	7,652	16,688	667.52	291.75	959.27

[1] $MTCO_2e$ = Metric Tons CO_2 Equivalent
[2] Decommissioning emissions would be similar to construction emissions, and are assumed to be same for purposes of this analysis.
[3] Construction and decommissioning emissions are amortized over the 25 year life of the project.

Upon completion, the 250 MW Aquamarine Solar Project would generate approximately 618,000 MWh/yr., which reflects the average generation of 2,473 MWhr/MW/yr for Kings County solar PV generating facilities in 2017 (CEC 2019). This is equivalent to the electrical consumption of 88,285 average California homes (at 7,000 KWh/yr). This electric power would be dispatched to the California Independent System Operator (CAISO) in accordance with a complex and dynamic formula that takes into account numerous variables in ongoing dispatching decisions to meet demand for electricity at any given time. One of those variables is compliance with the mandate to integrate electricity generated from renewable sources into the system at a predetermined rate, i.e., 60 percent by 2030 as mandated by SB 100, signed into law in September 2018. Since fossil fuel sources are typically less expensive and more reliable than renewable sources at the utility scale, it

is expected that in the absence of an RPS mandate, these fossil sources would continue to be the dominant fuel source for electrical generation in California. Thus renewable sources of electricity, such as solar generation, are considered to offset an equivalent amount of generation from other fuel sources, such as natural gas or coal, which would otherwise be dispatched by the CAISO in the absence of an RPS mandate. In other words, the installation and operation of solar facilities, such as the Aquamarine Solar Project, would result in a net reduction of fossil-based generation, and hence a net reduction in CO_2 emissions, relative to overall CO_2 emissions that would occur without the project.

In order to quantify the amount of net reduction in CO_2 emissions that would be represented by the project, the CO_2 emissions from a fossil plant with the same electrical output was considered for comparison. For the most efficient natural gas fired power plants (i.e., combined cycle plants) the California Air Resources Board applies an average GHG emission factor of 0.378 $MTCO_2e$ per MWh in calculating emissions avoided by renewable generation (SJ LAFCO 2011). (For comparison, the USEPA requires new natural gas power plants to emit no more than 1,000 lbs per MWh [0.454 $MTCO_2e$ per MWh.])(EE News 2013). With the application of CARB's factor, a gas-fired plant generating 618,999 MWh/yr (the equivalent of the Aquamarine Solar project) would produce annual GHG emissions of approximately 233,604 $MTCO_2e$/yr. Compared to the GHG emissions from the Aquamarine Solar Project and Gen-Tie Line (i.e., amortized construction and decommissioning emissions) of 959 $MTCO_2e$ per year (see Table 9), the emissions from an efficient gas-fired power plant would be approximately 244 times greater. Thus the Aquamarine Solar project would represent an annual net reduction of 232,645 $MTCO_2e$ per year, or a 99.6 percent net reduction in GHG emissions compared to the combined cycle gas-fired generation alternative.

In summary, while the Aquamarine Solar Project would result in a relatively low level of GHG emissions during project construction and decommissioning, the zero-emissions electrical generation provided during project operation would result in a net reduction of overall GHG emissions from electricity generation in California. Therefore, the greenhouse gas emissions generated by the project would have a *less-than-significant* effect on the environment.

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Aquamarine Solar Project and Gen-Tie Line

No Impact. There are no local plans, policies or regulations contained in the *2035 Kings County General Plan*, the *Kings County Zoning Ordinance*, or other local guidelines or regulations that directly address greenhouse gas emissions. Therefore, the determination of significance under this criterion is whether the project would hinder or delay implementation of the statewide GHG reduction targets set forth in AB 32.

The 2017 Climate Change Scoping Plan adopted by the California Air Resources Board outlines the strategies for achieving the mandated 2030 emissions reduction target. One of the key strategies is the Renewables Portfolio Standard (RPS), which now requires all electric utilities in California to include a minimum of 60 percent renewable generation sources in their overall energy mix by 2030. As a solar photovoltaic generating facility and supporting gen-tie, the Aquamarine Solar Project and Gen-Tie Line will help increase the proportion of renewables in the statewide energy portfolio,

thereby furthering the implementation of RPS by the target year instead of hindering or delaying its implementation. The addition of the project's solar generation to the state's electrical supply will help facilitate the retirement of existing older fossil-fueled generation plants, thereby avoiding or offsetting those sources of GHG emissions. Therefore, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* in terms of conflicting with a plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

REFERENCES – GREENHOUSE GAS EMISSIONS

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4.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	■	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	■	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	■
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	■
e) For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	■	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	■	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	■	☐

The following discussion of hazards and hazardous materials is partially based on the Phase I Environmental Site Assessment (ESA) prepared on the project site by Moore Twining Associates (MTA) in November 2018, and the Phase II Soil Sampling and Pesticide Analysis report prepared by MTA in November 2018. The MTA reports are contained in Appendix F of this document.

The Phase I ESA by MTA consisted of the following: visual inspections of the site and surrounding areas; reviews of historical aerial photographs, historical topographic maps, local permit records, and other property data sources; reviews of federal and state regulatory lists of known or potential hazardous waste sites or landfills. As part of the Phase I ESA, a government records report, prepared by Environmental Data Resources (EDR), was obtained. This report searches federal and state databases, including California Government Code 65962.5 list (Cortese List) and databases maintained by the Regional Water Quality Control Board, for potential sources of hazardous substances or petroleum that might affect the soil and/or groundwater quality of the project site and its vicinity.

Setting

The project site is an irregularly-shaped property, approximately 1,825 acres in size, located southeast of Avenal Cutoff Road and centered on the intersection of Laurel Avenue and the 25th Avenue alignment in

Kings County. The western portion of the site (west of the 25th Avenue alignment) comprises 871 acres of cultivated fields, and the eastern portion of the site (east of the 25th Avenue alignment) consists of 954 acres of vacant or fallow fields.

Unpaved irrigation canals are located along Laurel Avenue, the 25th Avenue alignment, and along the eastern and western boundaries of the site. In addition, two lateral unpaved canals were located in the eastern portion of the site, trending from south to north. Overhead electrical transmission lines are located along the 25th Avenue alignment and Laurel Avenue with small power lines branching off through the western and eastern portions of the site.

There are no buildings on the site or in the immediate vicinity. There are two active irrigation wells on the site with associated tanks, filtration systems, and electrical utilities. The water system is connected to PVC and metal irrigation lines that appear to be arrayed throughout the site. Two of the irrigation wells are accompanied by hydraulic pumps and 35-gallon drums of hydraulic oil. One of the hydraulic pumps is located in the eastern portion of the site and appears to be leaking. Staining was observed by MTA on the ground surrounding the drums of hydraulic oil and the hydraulic pumps. A 20 to 30-foot-deep concrete-lined irrigation cistern is located in the west-central portion of the site. One large, approximately 4,000-gallon poly tank is located near the irrigation well on the northwest portion of the site. This area also includes a transformer, a drum of hydraulic oil, and a chain-link fence enclosed tank of chlorine gas. No leaking or staining was observed in this area.

An underground Southern California Gas Company natural gas transmission pipeline runs diagonally through the northwest portion of the site. The pipeline runs parallel to Avenal Cutoff Road about one-half mile southeast of the roadway. An approximately 1.3-mile long segment of the pipeline passes diagonally through the northwest portion of the Aquamarine site. In addition, a spur gas line extends from the transmission pipeline eastward along the south side of Laurel Avenue to the community of Stratford.

Six pole-mounted transformers are located throughout the Site. Transformers in the eastern and western portions of the site are associated with water well pumps, filtration systems, and pumping stations along the canals. No staining or leaking that would prompt an environmental concern was noted.

In the San Joaquin Valley, agricultural lands in active cultivation are typically subject to application of agricultural chemicals including pesticides. In order to determine whether any agricultural chemicals (specifically persistent pesticides) are present in the site soils in concentrations that exceed regulatory thresholds, MTA conducted Phase II program of soil sampling and testing throughout the Aquamarine Solar Project site. The analytical results indicated that the soils are well below regulatory screening levels for organochlorine pesticides and the metal arsenic (MTA 2018b).

Given the past emissions of lead from vehicle exhaust, there is a concern with concentrations of aerially deposited lead along travel corridors such as Avenal Cutoff Road and Laurel Avenue. As part of its soil testing program, MTA also sampled the roadside areas adjacent to the project site for potential lead concentrations. The sample analysis showed that the lead in the samples was below the threshold for Human Health Risk Assessment (HHRA)(MTA 2018b).

No oil or natural gas wells (operating or abandoned) are present on the Aquamarine project site or the Gen-Tie corridor or their immediate vicinity. Southern Kings County and western Fresno County include

several oil and natural gas fields. The nearest oil field is the abandoned Westhaven oil field located west of the project site near the Fresno County line (DOGGR 2001). There are several abandoned oil wells in the Westhaven oil field, the nearest eight of which are in Kings County (all dry holes), located between 1.0 and 2.5 miles from the Aquamarine project site. Along Nevada Avenue, there are six abandoned oil wells (all dry holes) within 1.0 mile of the Gen-Tie corridor (the nearest of which is 500 feet south of Nevada Avenue), and two formerly productive (now idle) oil wells located 1,500 feet and 2,000 feet north of the Gen-Tie corridor. The nearest natural gas fields are located southeast of Kettleman City, approximately 9 miles south of the Aquamarine project site and 6 miles south of the Gen-Tie corridor. The wells in these fields have been abandoned, except for one remaining active gas well located 11 miles southeast of the project site in the Tulare Dry Lakebed (DOGGR 2019).

There is no evidence that the Aquamarine site includes any potential contamination due to disposal, spillage, or leakage of hazardous materials or any other source. A review of federal, state, and local databases indicated that there are no known hazardous materials sites on the project site or surrounding area.

Environmental Evaluation

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Aquamarine Solar Project

Less-than-Significant Impact with Mitigation Incorporated. The Aquamarine Solar Project would involve the use of hazardous materials during construction, project operation, and decommissioning, as discussed below.

Construction

The hazardous materials used during construction of the Aquamarine Solar Project would include gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, welding and soldering supplies, pressurized gases, etc. All hazardous materials would be stored in containers that are specifically designed for the materials to be stored.

During construction, substantial quantities of gasoline, diesel fuel, and transformer insulating oil (mineral oil) will be transported to the site. A spill of these hazardous liquids en route to the project site could result in significant impacts to soil, surface water, groundwater, or the public. However, such materials are routinely and safely transported on public roadways. The transport of large quantities of hazardous materials is strictly regulated by the California Highway Patrol (CHP). Large quantities of hazardous materials used during project construction would be transported along regulated routes by a licensed transporter, and would not pose a significant hazard to the public or the environment.

During construction of the solar facilities, minor spills or discharges of hazardous materials could occur due to improper handling, storage, and/or disposal. Unless mitigated, this would represent a significant impact. In order to reduce the potential impacts from hazardous materials to less-than-

significant levels, the following mitigation measure shall be implemented in conjunction with the project.

> ***Mitigation Measure HAZ-1: Protection from Hazardous Materials****. In order to protect the public from potential release of hazardous materials, the following measures shall be implemented during project construction, operation, and decommissioning:*
>
> *a. The project applicant shall prepare and implement a Hazardous Materials Business Plan (HMBP) in accordance with the requirements of, and to the satisfaction of, the Kings County Public Health Department Environmental Services Division;*
>
> *b. The project applicant shall prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of the State Water Resources Control Board, and to the satisfaction of the Central Valley Regional Water Quality Control Board.*
>
> *The potential for minor spills would be largely avoided through implementation of the Hazardous Materials Business Plan (HMBP), as required under the Hazardous Materials Release Response Plan and Inventory Act of 1985. Under this state law, the applicant is required to prepare an HMBP to be submitted to the Kings County Public Health Department, Environmental Health Services Division, which is the Certified Unified Program Agency (CUPA) for Kings County. The HMBP would include a hazardous material inventory, emergency response procedures, training program information, and basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of at the proposed project site, and procedures for handling and disposing of unanticipated hazardous materials encountered during construction. The HMBP would include an inventory of the hazardous waste generated on site, and would specify procedures for proper disposal. As required, hazardous waste would be transported by a licensed hauler and disposed of at a licensed facility. According to the HMBP reporting requirements, workers must be trained to respond to releases of hazardous materials in accordance with State and federal laws and regulations governing hazardous materials and hazardous waste (e.g., HAZWOPER training required by OSHA). Any accidental release of small quantities of hazardous materials would be promptly contained and abated in accordance with applicable regulatory requirements and reported to the Environmental Health Services Division. As the CUPA for Kings County, the Environmental Health Services Division of the County Public Health Department is responsible for implementation and enforcement of HMBPs. Implementation of the HMBPs for the Aquamarine Solar Project and Gen-Tie Line would ensure that minor spills or releases of hazardous materials would not pose a significant risk to the public or the environment.*

In addition, the project proponent will be required to prepare, or to have prepared, and to implement a Storm Water Pollution Prevention Plan (SWPPP) for each phase of the project, as required by the State Water Resources Control Board (SWRCB), and as also specified for the project in Mitigation Measure HYD-1 (for a detailed discussion, see section *4.10 Hydrology and Water Quality*). The SWPPPs will specify best management practices for control, containment of hazardous materials during construction, including housekeeping measures for control of contaminants such as petroleum products, paints and solvents, detergents, fertilizers, and pesticides, as well as vehicle and equipment fueling and maintenance practices, and waste management and disposal control practices, among other things. The implementation and enforcement of SWPPPs at the project site is the responsibility of the Central Valley Regional Water Quality Control Board, whose

responsibilities include conducting inspections of the project construction sites to ensure effective implementation of Best Management Practices (BMPs) specified in the SWPPPs prepared for each project phase.

In summary, the implementation of Mitigation Measure HAZ-1 would ensure that hazardous materials used in project construction and decommissioning are handled, stored, and disposed of in accordance with the HMBP and SWPPP required to be implemented in conjunction with the project, with oversight by the responsible agencies. Therefore, implementation of Mitigation Measure HAZ-1 would reduce potential for impacts to the public and the environment from routine transport, use, and disposal of hazardous materials during project construction to *less-than-significant* levels.

Project Operation

Operation and maintenance of the Aquamarine Solar Project would involve the transport, use, and disposal of minor amounts of hazardous materials, including motor vehicle fuel, lubricants, antifreeze, used coolant, janitorial supplies, paint, degreasers, pesticides, herbicides, and fire suppressant. During operation of the solar facilities, minor spills or discharges of hazardous materials could occur due to improper handling, storage, and/or disposal. Unless mitigated, this would represent a significant impact. In order to reduce the potential impacts from hazardous materials during project operations to less-than-significant levels, Mitigation Measure HAZ-1, as set forth above, would be implemented in conjunction with the project.

As described above for the construction phase, compliance with existing laws and regulations governing the handling, storage, containment, clean-up, and disposal of hazardous materials and hazardous waste would minimize the risk to the public and the environment of exposure to hazardous materials. Mitigation of such impacts would be ensured through implementation of Mitigation Measure HAZ-1, which applies to both project construction and project operations.

The transformers within the solar facilities would contain mineral oil, although transformer oil does not ordinarily require replacement. The transformers would be provided with secondary containment to minimize hazard from any leaks or spills.

Herbicides would be used at the Aquamarine Solar Project to control noxious weeds and invasive species, in accordance with the Weed Abatement Plan to be prepared for the project in accordance with the Kings County Zoning Ordinance. The herbicides would be applied by a licensed herbicide applicator, in compliance with the regulations of the U.S. EPA, and the California Department of Pesticide Regulation (DPR). As discussed in item 'b' below, modern herbicides and pesticides degrade rapidly and therefore are not considered to pose a contamination hazard according to the California Department of Toxic Substances Control (DTSC 2008). As also discussed in item 'b', past agricultural practices on the project site involved the use of environmentally persistent pesticides, although recent soil testing indicated that residual concentrations of these "legacy" pesticides in soils at the site are well below hazardous levels (MTA 2018).

Although not currently proposed, it is possible that the Aquamarine Solar Project could employ thin-film modules containing Cadmium-Telluride (CdTe) which is classified as a hazardous material. In any solar facility, it is expected that some modules will occasionally need replacement during the life of the facility. The potential hazards associated with CdTe PV modules are addressed in detail under item 'b' below.

In summary, the implementation of Mitigation Measure HAZ-1 would ensure that hazardous materials used in project operation are handled, stored, and disposed of in accordance with the HMBP and SWPPP required to be implemented in conjunction with the project, with oversight by the responsible agencies. Therefore, implementation of Mitigation Measure HAZ-1 would reduce potential for impacts to the public and the environment from routine transport, use, and disposal of hazardous materials during project construction to *less-than-significant* levels.

Decommissioning

As described in section *2.2 Project Description*, when the Aquamarine solar facility reaches the end of its productive life, the solar arrays and supporting infrastructure would be disassembled and removed, with all materials recycled, reused, or disposed of as appropriate in accordance with the Soil Reclamation Plan to be prepared as prescribed in Mitigation Measure AG-2. The materials to be removed would include solar arrays, inverters, transformers, cabling and wiring, and perimeter fencing, among other things. During decommissioning of the solar facilities, minor spills or discharges of hazardous materials could occur due to improper handling, storage, and/or disposal. Unless mitigated, this would represent a significant impact. In order to reduce the potential impacts from hazardous materials during project decommissioning to less-than-significant levels, Mitigation Measure HAZ-1, as set forth above, would be implemented in conjunction with project decommissioning.

As discussed above, the project could include solar modules containing CdTe. The potential hazards associated with removal of CdTe PV modules are addressed in detail under item 'b' below.

In conclusion, the handling, use, storage, transport, and disposal of hazardous materials during the construction, operation, and decommissioning of the Aquamarine Solar Project could potentially result in significant hazards to the public and the environment. The implementation of Mitigation Measure HAZ-1, as set forth above, would be reduce the potential hazard to the public or the environment from routine transport, use, or disposal of hazardous materials associated with the Aquamarine Solar Project to *less-than-significant* levels.

Gen-Tie Line

The construction and maintenance of the Gen-Tie Line would involve the handling and use of hazardous materials such as fuels, lubricants, solvents, welding supplies and other materials. There is a potential for accidental spills or discharges of these materials to occur during construction or operation of the Gen-Tie Line. The potential for impacts to the public and the environment from routine transport, use, and disposal of hazardous materials during construction and operation of the Gen-Tie Line represents a *potentially significant impact*. With implementation of Mitigation Measure HAZ-1 above, and MM HYD-1 (in section *4.10. Hydrology and Water Quality*), the impact would be reduced to *less than significant*.

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Aquamarine Solar Project

Less-than-Significant Impact with Mitigation Incorporated. There are four conditions associated with the Aquamarine Solar Project that have the potential to release hazardous materials into the environment. These include: 1) Hydraulic irrigation pumps and 55-gallon drums; 2) accidental rupture of the natural gas transmission pipeline that runs through the project site; 3) accidental release of hazardous materials from solar panels, and; 4) exposure to valley fever. These conditions are discussed in turn below.

Hydraulic Irrigation Pumps and 55-Gallon Drums

The two active irrigation wells on the project site are accompanied by hydraulic pumps and 35-gallon drums of hydraulic oil. The hydraulic pump located in the eastern portion of the site appears to be leaking. Staining was observed by MTA on the ground surrounding the drums of hydraulic oil and the hydraulic pumps. Any spilled hydraulic oil that may remain in the soil in hazardous concentrations could be mobilized by ground disturbing activities, and this would present a health hazard to construction workers during installation of the solar facilities. This would represent a *potentially significant impact*. With implementation of Mitigation Measure HAZ-2 below, the impact would be reduced to *less than significant*.

> ***Mitigation Measure HAZ-2: Conduct Soil Sampling and Remediation as Applicable****. Prior to initiation of ground disturbing activities, soil samples shall be taken from areas of potential contamination and tested for hazard levels of constituents of concern, in accordance with work plans prepared by qualified professionals. Any soils that exceed regulatory limits for hazardous materials shall be removed or otherwise remediated prior to any ground disturbing activity, to the satisfaction of the responsible regulatory agencies in accordance with applicable laws and regulations.*

Natural Gas Pipeline

An underground natural gas transmission pipeline, owned and operated by Southern California Gas Company (SoCalGas), runs diagonally in a 1.3-mile segment through the northwest portion of the site. The 20-inch high pressure gas pipeline lies within a 30-foot wide easement that runs parallel to Avenal Cutoff Road about one-half mile southeast of the roadway. The Aquamarine project has been designed to avoid placement of solar arrays or equipment within the pipeline easement, although internal gravel driveways will cross over the pipeline easement as is permitted (see Figure 4b – Site Plan). In addition, a spur gas line branches off the transmission pipeline and heads eastward along the south side of Laurel Avenue to the community of Stratford. One or more project entry drives would cross this spur gas line to provide access to the southern portions of the Aquamarine Solar Project.

Since work associated with the internal driveways and entry driveways would occur within the gas pipeline easements, any such work would be subject to the applicable provisions of the California Government Code, which set forth detailed procedures to be followed for the protection of underground infrastructure, and specifies substantial financial penalties for failure to comply

(Government Code Sections 4216-4216.9). This law requires that an excavator must contact a regional notification center (e.g., Underground Service Alert [USA]) at least two days prior to excavation near any subsurface installation. (The existing SoCalGas warning markers along the pipeline alignment indicate only the general location of the pipeline.) The USA is then required to notify the utilities that may have buried lines within 1,000 feet of the planned excavation. Representatives of the utility are required to field mark the specific location of their facilities within the planned work area before excavation can commence. Since a high pressure natural gas pipeline is deemed a "high priority subsurface installation" under Government Code Section 4216, the excavator and pipeline operator are required to conduct an on-site meeting to determine actions required to verify the location of the pipeline. If the planned excavation is to occur within two feet of the field marked pipeline location, the exact location of the subsurface pipeline shall be determined by excavation with hand tools only prior to using power-driven excavation equipment in the pipeline vicinity. In addition, a SoCalGas transmission crew will stand by during construction activity (SoCalGas 2018). With the implementation of legally required safety measures in conjunction with work near the natural gas transmission pipeline, the potential hazards associated with the pipeline would be *less-than-significant*.

Hazardous Materials in Solar Panels

There are two dominant semiconducting materials used in photovoltaic technology including: crystalline silicon (c-si) which is the conventional material used in flat plate panels, and; thin-film semiconductors such as amorphous silicon (a-si) and cadmium telluride (CdTe). The silicon based solar cells do not contain hazardous materials, but CdTe is a hazardous substance when not imbedded within a PV module. (Cadmium compounds are classified by US EPA as a probable human carcinogen (US EPA 2016)). Although not currently planned, it is possible that the Aquamarine Solar Project could include thin film modules with CdTe. At present, CdTe is only contained in modules manufactured by First Solar Inc.

During the manufacturing process, the CdTe semiconductor layer is sealed between two sheets of glass. CdTe contained within PV modules is highly stable and no emissions of any kind are generated when PV modules are used under normal conditions (Fthenakis 2003). The primary manufacturer and operator of solar facilities with CdTe PV modules, First Solar, has a program for recycling modules at the end of their 25-year life cycle. During the recycling and refining process, up to 90 percent of the semiconductor material is recovered for reuse in new modules (First Solar 2018).

In summary, the potential for emissions of CdTe is negligible during normal use of CdTe PV modules. Recycling of CdTe modules is preferable to disposal at a landfill, from a waste reduction and materials recovery standpoint, and a manufacturer's program is in place to accept used CdTe PV modules. However, since the evidence indicates there is a negligible human health risk associated with CdTe modules, mandatory recycling of these modules is not required.

In conclusion, the potential use of CdTe PV modules at the Aquamarine Solar Project would not result in a significant risk of a release of hazardous materials that would be harmful to human health or the environment. Therefore, the potential for health hazard due to CdTe PV panels would be represent a *less-than-significant impact*.

Valley Fever

The project site is located in an area that may harbor the fungus that causes Valley Fever (or *coccidioidomycosis*), a lung disease common in the southwestern United States. Valley Fever is caused by the fungus *Coccidioides immitis*, which grows in soils in areas of low rainfall, high summer temperatures, and moderate winter temperatures. The fungus is prevalent in the soils of the San Joaquin Valley, including Kings County, where the average annual exposure rates are more than 100 in 100,000 people (CDPH 2019). The fungal spores become airborne when the soil is disturbed by winds, construction, farming, or other activities. Most people who inhale the spores do not get sick. Usually, susceptible individuals experience flu-like symptoms and will feel better on their own within weeks, although some people require antifungal medication (CDC 2019). There is an increased risk of exposure to people working in construction and agriculture due to their proximity to potential release of airborne spores.

The fungal spores that cause Valley Fever are most prevalent in undisturbed soils. Since the land in Kings County consists predominantly of disturbed agricultural land, the risk of infection due to developments on agricultural land is considered low (Kings County 2009b). However, the fungal spores are too small to be seen and it is unknown if the soils of the project site contain Valley Fever spores. As such, there is a potential for on-site workers to become infected. The potential for airborne release of Valley Fever spores would be greatest during construction and decommissioning when soils are temporarily exposed and disturbed by grading and excavation activity. The health risk to workers from potential exposure to valley fever represents a potentially significant impact. In order to reduce the potential health impacts from Valley Fever to less-than-significant levels, the following mitigation measures shall be implemented in conjunction with the project.

> ***Mitigation Measure HAZ-3: Preventing Valley Fever Exposure.*** *In order to protect the public and workers from Valley Fever, the following measures shall be implemented during project construction and decommissioning:*
>
> *a. Implement the Dust Control Plan required to be approved for the project by the San Joaquin Valley Air Pollution District under District Rule 8021 prior to ground disturbing activity.*
>
> *b. Provide workers with NIOSH-approved respiratory protection with particulate filters rated as N95, N99, N100, P100, or HEPA, as recommended in the California Department of Public Health publication "Preventing Work-Related Coccidioidomycosis (Valley Fever)," available at http://www.cdph.ca.gov/programs/hesis/Documents/CocciFact.pdf.*

The implementation of these measures in conjunction with project construction and decommissioning would minimize the risk of exposure of workers at the site to Valley Fever. Therefore, the potential hazard to the public from potential exposure to Valley Fever would be reduced to *less-than-significant* levels.

Residual Agricultural Chemicals

Organochlorine Pesticides from Past Agricultural Practices

In the past, agricultural practices commonly included the application of environmentally persistent pesticides such as DDT, Aldrin, dieldrin, and mirex. Collectively known as organochlorine pesticides (OCPs), these compounds were found to be toxic and bioaccumulative, and were banned from use,

beginning in 1974 for DDT, and quickly thereafter for other OCPs in California. Due to the environmental persistence of these compounds, residual concentrations may still be present in the soils where they were applied. For example, the half-life of DDT in soil is 2-15 years depending on local climate conditions, while most other OCPs (and POPs – Persistent Organic Pesticides, like Toxaphene) have half-lives of up to 12 years. Thus, a compound with a 15-year half-life would be 50 percent degraded after 15 years, and 75 percent degraded after 30 years and so on. Assuming DDT was applied on a site, and that the last application was in 1974, and also assuming the high end of the range for its half-life (i.e., 15 years), the concentration of DDT would have degraded to less than 15 percent of its original strength by 2019.

While there is some potential for these "legacy pesticides" to be present on agricultural lands in hazardous concentrations, it is considered more likely that high concentrations would be found in areas where the chemicals were loaded, stored, or mixed. Incidences of such contamination are associated with the "hot spots" resulting from occasional spillage at chemical storage sites and have not been found to be associated with areas where the chemicals were merely broadcast over the crops. Thus, unless chemical mixing has occurred, there is typically a low potential for environmentally persistent pesticides/herbicides related to crop cultivation to exist in the near-surface soils at concentrations which would require regulatory action.

It is unknown whether OCPs or POPs were applied at the site before they were banned in the 1970s. If they were applied, there is a low likelihood that the soils are contaminated, particularly since there no evidence that mixing of agricultural chemicals occurred on the Aquamarine project site in the past. The project site is part of a much larger agricultural operation, and has not historically been used for mixing or loading of pesticides, which has been conducted off the project site. Thus it is highly unlikely that legacy pesticides like DDT would be present on the project site in hazardous concentrations. In order to determine if the soil on the project site contains any significant concentrations of environmentally persistent agricultural chemicals, a Phase II program of soil sampling and testing was performed by Moore Twining Associates (MTA) in November 2018. The analytical results indicated that the soils are well below regulatory screening levels for organochlorine pesticides, as well as Toxaphene and the metal Arsenic. The MTA report stated that no further action is necessary with regard to residual agricultural chemicals on the project site (MTA 2018b). Therefore, the potential impact due to exposure to residual agricultural chemicals is *less than significant*.

Recent Use of Agricultural Chemicals

The pesticides applied at the Aquamarine site in the recent past consist of non-persistent compounds that degrade rapidly (within a few days or weeks) after application. The longest-lived pesticides applied at the site include paraquat and glyphosphate (Roundup), which have half-lives of approximately 1,000 days and 100 days, respectively (UCD 2014). As such, any pesticide concentrations at the site from the applications in years prior to project development would degrade to non-detectable levels by the time of site development for all pesticides except paraquat. The Department of Toxic Substances Control (DTSC) does not recommend sampling for currently permitted pesticides since they have relatively short half-lives. While paraquat does have a longer half-life in soil, it has not been detected or rarely detected at trace levels at sites which DTSC has had oversight; therefore, routine analysis for paraquat is not required for field areas. Analysis for paraquat may be required in storage and mixing/loading areas (DTSC 2008). There is no evidence that mixing or loading of paraquat or other pesticides has been conducted on the project site. Given

these facts, and based on DTSC's guidance and experience, it is reasonable to conclude that hazardous concentrations of paraquat are not present at the site.

It is also noted that the routine application of registered pesticides is not a Recognized Environmental Condition (REC) by the American Society for Testing and Materials (ASTM) if applied according to the labeling instructions (Lavey 2014).

Based on the information and analysis presented above, it is concluded that residual agricultural pesticides are not present on the Aquamarine project site in hazardous concentrations. Therefore, the potential hazard to the public and workers from exposure to residual agricultural chemicals at the Aquamarine project site represents a *less-than-significant* impact

Gen-Tie Line

Depending on the final location of the disturbance areas for monopole installation and other construction-related activity, there is a potential for agricultural well sites to be located nearby which may have been subject to spills of hydraulic oil. As discussed in connection with Aquamarine Solar Project above, any spilled hydraulic oil, or other hazardous material, that may remain in the soil in hazardous concentrations could be mobilized by ground disturbing activities, and this would present a health hazard to construction workers during installation of the solar facilities. This would represent a *potentially significant impact*. With implementation of Mitigation Measure HAZ-2 ("Conduct Soil Sampling and Remediation, as Applicable"), as set forth above, the impact would be reduced to *less than significant*.

The construction of the Gen-Tie Line would involve ground disturbance associated with site clearance, grading, and excavation for transmission towers, access driveways, pulling sites, and construction staging areas. The total area of temporary ground disturbance for the Gen-Tie Line would be approximately 125 acres in Kings County. As discussed above for Aquamarine Solar Project, it is unlikely that environmentally persistent pesticides are present in the soils in hazardous concentrations. As such the potential impact due to exposure of residual agricultural chemicals would *less than significant*.

The construction of the Gen-Tie Line would result in the temporary disturbance of approximately 125 acres in Kings County, with the potential for release of Valley Fever fungal spores that may be present in the soils. Construction workers who have not developed immunity to Valley Fever through previous exposure would be at risk of infection and serious illness. The health risk to gen-tie construction workers from potential exposure to Valley Fever represents a *potentially significant impact*. With implementation of Mitigation Measure HAZ-3, as set forth above, the impact would be reduced to *less than significant*.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Aquamarine Solar Project and Gen-Tie Line

No Impact. There are no schools within one-quarter mile of the Aquamarine project site or the Gen-Tie corridor. The nearest schools are located in: Stratford, 4.5 miles east; NAS Lemoore, 3 miles

northeast; Huron, 10 miles west; and Kettleman City, 14 miles south. The Aquamarine Solar Project and Gen-Tie Line would result in *no hazardous materials impacts* to schools in the vicinity.

d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Aquamarine Solar Project and Gen-Tie Line

No Impact. There are no hazardous materials sites on the Aquamarine project site or the Gen-Tie corridor or surrounding properties listed on the Department of Toxic Substances Control's (DTSC's) Hazardous Waste and Substances Site List (Cortese List) compiled pursuant to Government Code Section 65962.5 (DTSC 2018). A comprehensive search of all federal, state, and local database information systems likewise indicated no listed hazardous materials sites. A review of files for the Aquamarine project site and adjacent properties at the Kings County Environmental Health Department (KCEHD), and State Water Resources Control Board (SWRCB) likewise identified no documentation for the project site or adjacent properties (MTA 2018a). As such, there is *no impact* associated with the project in this regard.

e) For a project located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

[Note: The subject of excessive noise relative to public airports is addressed in section *4.13 Noise*, item 'c'.]

Aquamarine Solar Project

Less-than-Significant Impact. The Aquamarine project site is not located within an airport land use plan or within two miles of a public airport or public use airport. The nearest public or public use airports include the Hanford, Corcoran, and Coalinga municipal airports, and the Harris Ranch airfield, all of which are located 17 miles or more from the project site. The airfield at Naval Air Station Lemoore (NASL) is located 6.0 miles north of the Aquamarine project site. While the project site is not within an 'airport land use plan,' it is included in the Military Influence Area of Naval Air Station Lemoore (NASL), and is within the study area of the NAS Lemoore Joint Land Use Study (JLUS). The JLUS has no jurisdictional effect on the project but includes relevant information regarding potential safety hazards posed by NASL operations upon the project. The project site is located 3.5 miles south of the nearest accident potential zone mapped for NASL. The project site lies within an NASL flight approach/departure zone which has a height restriction of 500 feet above ground level, as regulated by the Federal Aviation Administration (JLUSPC 2011). The tallest structures within the project would consist of structural elements associated with the on-site substation that would be as high as 40 feet, and monopoles in the northern segment of the Gen-Tie Line where it enters the southern portion of the Aquamarine site, which would be 100 feet tall. Most project structures would consist of solar arrays, inverter pads, and meteorological stations that would be less than 8 feet high. Thus the tallest project features would be well within the 500-foot height limit for physical obstructions within the applicable NASL approach/departure zone.

Given the proximity of NAS Lemoore to the Aquamarine project site, there is a potential concern with the effect of glare on flight operations originating from the base. All of the solar panels installed at the project will be composed of photovoltaic cells. Solar PV employs glass panels that are designed to maximize absorption and minimize reflection to increase electricity production efficiency. To limit reflection, solar PV panels are constructed of dark, light-absorbing materials, and are given an anti-reflective coating or textured surface which can reduce reflectivity to less than 4 percent of incoming sunlight (EE Times 2012). In comparison, the reflectivity of standard glass is over 20 percent. By contrast, concentrating solar thermal systems, which employ arrays of highly polished mirrors to refocus the radiation on a receiver tube or tower, reflect about 90 percent of the incoming sunlight (FAA 2010).

The NAS Lemoore Joint Land Use Study (JLUS) addresses concerns with aviation hazards from reflection and glare. Solar facilities are mentioned specifically for their potential to produce reflective surfaces, but the JLUS acknowledged that the main concern was with highly reflective mirrors used in concentrating solar thermal facilities. The JLUS acknowledges that "if there is no central collection tower, the new solar panels can be made non-reflective and arrays could be installed to not cause any height or reflective issues" (JLUSPC 2011). Several PV solar facilities have been installed within military air bases elsewhere the U.S. without adversely affecting flight operations.

It is noted that a glint and glare study using the Sandia Laboratory's Solar Glare Analysis Tool (SGHAT) was prepared for the adjacent Mustang Two Solar Project MND in August 2016. In the analysis, impacts from solar glare were given three ranks: potential for permanent eye damage; potential for temporary after-image (a lingering image of the glare in the field of view); and low potential for temporary after-image. Results from the analysis indicated that pilots flying over and near the solar facility would experience a low potential for a temporary after-image, and the potential would be limited to early morning from approximately April through September. The low potential for temporary after-image level is generally considered to be safe for pilots (Kings County 2017). The results of this glint and glare analysis are considered to be applicable to the Aquamarine Solar Project, which is directly adjacent to the Mustang Two Solar Project site. Therefore, it is concluded that the PV solar panels installed at the Aquamarine project site would not produce light or glare that would pose a hazard to flight operations at NAS Lemoore.

Additionally, the employment density at the Aquamarine Solar Project would be very low. No staff would be permanently stationed at the site, with one or two staff visiting the site regularly, and with up 10 staff present when panel cleaning and maintenance activities are in progress. Therefore, the Aquamarine Solar Project would not result in a significant safety hazard to on-site employees due to the proximity of public airports or public use airports. As such, the potential for the project to be adversely affected by aviation hazards is *less than significant*.

Gen-Tie Line

The nearest municipal airports to the Kings County segments of Gen-Tie Line include the Hanford, Corcoran, and Coalinga airports, all of which are located between 15 and 20 miles from the Gen-Tie corridor at their nearest points. In addition, the airfield at NAS Lemoore is located 10 miles from the Gen-Tie corridor. There are no clear zones or safety zones identified in the NASL Joint Land Use Study that extend south of SR-198, and the Gen-Tie Line is entirely outside the NASL height restriction zones. The Gen-Tie Line is also entirely outside the 3-mile buffer zone for NASL, and no

portion of the Gen-Tie Line is crossed by a mapped flight track for aircraft operations (JLUS 2011). The Gen-Tie Line would not include reflective surfaces that could produce glare and thus would not pose a potential safety hazard to aviation in this regard. In summary, the Gen-Tie Line is too far from the nearest municipal airports and the NASL airfield to disrupt or interfere with flight operations. Therefore, the impact of the Gen-Tie Line upon flight operations associated with public or public use airports, as well as NAS Lemoore, would be *less-than-significant*.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact. In times of emergency or disaster response, the State highways would serve as primary routes, and designated County arterial roadways in the area would serve as secondary routes. In the project vicinity, the primary routes would include SR-198, SR-41, SR-269, and I-5, and the secondary routes would consist of Avenal Cutoff Road and Laurel Avenue (Kings County 2010e). These nearby highways and County roads provide several alternative escape routes with relatively low ambient traffic volumes. The Aquamarine Solar Project and Gen-Tie Line would not result in changes to the adjacent roadway network, and the small operational workforce would not create or increase traffic congestion during times of emergency or disaster. During the construction phase, slow moving vehicles or delivery of large pieces of equipment or components could result in temporary traffic slowdowns, although such conditions would be infrequent and would be managed pursuant to traffic controls specified in Mitigation Measure TR-1 (see section *4.17 Transportation*). The Aquamarine Solar Project and Gen-Tie Line would not impair implementation of, or physically interfere with, an adopted emergency response plan or an emergency evacuation plan, and therefore the potential impact in this regard would be *less than significant*.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact. The Aquamarine Solar Project and Gen-Tie Line are not located within or near a wildland fire hazard area. The Fire Hazard Severity Zone (FHSZ) map for Kings County prepared by the California Department of Forestry and Fire Protection (CalFire) shows the project site as "unzoned" for fire hazard. The nearest areas zoned on the FHSZ map are located in the foothills along Interstate 5 to the southwest of the project area, which are zoned "Moderate Severity Fire Hazard" (CalFire 2007b). The Health and Safety Element of the Kings County General Plan includes a map of Potential Fire Hazards which shows project area as being subject to "little or no threat" (Kings County 2010e). Therefore, the risk of wildland fire at the Aquamarine Solar Project and Gen-Tie Line is *less than significant*.

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4.10 HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality?	☐	■	■	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impact sustainable groundwater management of the basin?	☐	☐	■	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. result in substantial erosion or siltation on- or off-site;	☐	■	☐	☐
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	■	☐
iii. 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	☐	☐	■	☐
iv. impede or redirect flood flows?	☐	☐	☐	■
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	■
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	■

Setting

A comprehensive description of the hydrological setting and regulatory context of the Aquamarine Solar Project and Gen-Tie Line area is provided in the Draft PEIR on the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan, which is incorporated into this document by reference PEIR pursuant to Section 15150 of the State CEQA Guidelines. The description of the overall hydrological setting is found on pages 3.2-1 through 3.2-20 of the Draft PEIR (WWD 2017b). A description of the specific conditions relevant to the Aquamarine Solar Project site and Gen-Tie corridor is provided below.

Runoff from the Sierra Nevada is carried in creeks, rivers and sloughs as far west as the Kings River which flows in a southerly direction to the Tulare Dry Lakebed, passing through the project vicinity approximately 2 miles to the east of the Aquamarine site. The drainage courses originating in the Coast Ranges to the west dissipate west of the California Aqueduct, approximately 7 miles west of the Aquamarine project site and 3 miles west of the Gen-Tie corridor. The project area is virtually level and has no natural drainage features. Rainfall occurring in the project area is absorbed by the soil and crop cover.

Aquamarine Solar Project

The Aquamarine project site is served by a series of interconnected irrigation canals and ditches. The irrigation canals convey and distribute surface water and pumped well water throughout the area. There are two major canals that pass through the project site, including: an irrigation canal that runs in a north-south direction adjacent to the 25th Avenue alignment, and; a canal that runs in an east-west direction along the south side of Laurel Avenue. A major drainage ditch runs along Avenal Cutoff Road on the project's northwest boundary. There are also smaller canals and ditches in the southwest portion of the project site.

There are two active agricultural well within the Aquamarine site. One well is located on the west boundary of the project site, south of Avenal Cutoff Road, and another well is located at the far eastern project boundary on the south side of Laurel Avenue.

Gen-Tie Line

The lands traversed by the Gen-Tie Line in Kings County are very similar in character those of the Aquamarine site. The terrain is virtually level with no natural drainage features, and with a few canals and ditches in the vicinity of its eastern-most segments.

Environmental Evaluation

a) Would the project violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality?

Water Quality Standards and Waste Discharge Requirements

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact. Water quality standards can refer to drinking water standards or surface water standards. Further, there are separate surface water standards for discharges from wastewater treatment plants and for discharges of stormwater. These are discussed in turn below.

Drinking Water Standards - No Impact: Drinking water standards are implemented by the State Water Resources Control Board, and apply to local water distribution systems for domestic water supply. There are no plans to install a domestic water distribution as part of the Aquamarine Solar Project or Gen-Tie Line. Since drinking water for construction and operational staff would be provided by bottled water delivered by truck, the drinking water standards would be applicable at the water bottling plant. (See section *4.19. Utilities and Services* for a detailed discussion of water supply.)

Wastewater Treatment Standards – Less-than-Significant Impact: Waste Discharge Requirements generally refers to standards applied to local wastewater treatment facilities by the Regional Water Quality Control Board for quantities and quality of wastewater discharge. Individual septic systems are regulated under the Kings County Plumbing Code, which sets forth design criteria and standards for their installation. Since the Aquamarine project site is located

in an area with a perched water table, it is designated by Kings County as an area requiring engineered septic systems. As such, the septic and leachfield system at the Aquamarine project will be designed and constructed as specified by a qualified registered professional engineer, and subject to approval of the Kings County Building Official, which would ensure effective functioning of the septic and leachfield system and avoid impacts to groundwater quality. The Gen-Tie Line would not require permanent wastewater facilities. During construction of both the Aquamarine project and Gen-Tie line, sanitary needs will be provided by portable chemical toilets that will be serviced by an outside contractor as needed. Therefore, the Aquamarine project and Gen-Tie line will meet waste discharge requirements and the impact would be *less than significant*.

Stormwater Standards – No Impact: The Central Valley Regional Water Quality Control Board has not established numeric standards for surface water runoff quality; therefore, no surface water quality standards apply to the Aquamarine Solar Project or Gen-Tie Line. (See following paragraphs for a detailed discussion of surface and groundwater quality.)

Substantially degrade surface or ground water quality?

Aquamarine Solar Project

Less-than-Significant Impact with Mitigation Incorporated. During the construction and decommissioning phases, there is a potential for discharges of hazardous materials that could adversely affect the quality of surface water or groundwater. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination of stormwater. Staging areas and building sites can be the source of pollution due to paints, solvents, cleaning agents, and metals contained in the surface of equipment and materials. Gross pollutants such as trash, debris, and organic matter are additional potential pollutants associated with the construction and decommissioning phases of the Aquamarine project. The potential for discharges of hazardous materials to degrade water quality during the construction and decommissioning phases of the project represents a potentially significant impact.

The potential water quality impacts resulting from discharges of hazardous materials during construction and decommissioning would be reduced to less-than-significant levels through implementation of Mitigation Measure HYD-1: Stormwater Quality Protection, as set forth in item 'c' below.

Under Mitigation Measure HYD-1, the measures to prevent hazardous contamination during the construction and decommissioning phases will be specified in the Storm Water Pollution Prevention Plans (SWPPPs) required to be implemented under the mitigation measure. The project SWPPPs will include construction and decommissioning phase housekeeping measures for control of contaminants such as petroleum products, paints and solvents, detergents, fertilizers, and pesticides, as well as vehicle and equipment fueling and maintenance practices, and waste management and disposal control practices, among other things. The SWPPPs would also include housekeeping measures to be followed during project operations.

With the implementation of Mitigation Measure HYD-1, particularly the hazardous materials provisions of the required SWPPPs, the potential for impacts to surface and groundwater quality from hazardous materials releases during project construction, operation, and decommissioning of the Aquamarine Solar Project would be *less than significant*.

Gen-Tie Line

During construction of the Gen-Tie Line, there is a potential for discharges of hazardous materials, as discussed above for the Aquamarine Solar project, which could adversely affect the quality of surface water or groundwater. The potential discharges of hazardous materials during construction and operation of the Gen-Tie Line could result in a potentially significant impact to water quality. With implementation of Mitigation Measure HYD-1, the impact would be reduced to a *less than significant* level.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impact sustainable groundwater management of the basin?

Aquamarine Solar Facility

Less-than-Significant Impact. The Aquamarine Solar Project would require water supplies during both the construction and operational phases, as discussed in turn below.

Project Construction

During the grading and construction phases, water would be regularly applied to exposed soils and internal access driveways for dust suppression. During earthwork, water would also be required in soil conditioning for optimum moisture content. As discussed in the section *2.2. Project Description*, it is estimated that the 250 MW SGF will require a total of 365 acre-feet of water during its 2-year construction period. It is anticipated that water for SGF construction will be obtained from the existing agricultural well on the western boundary of the project site.

Current groundwater pumping in the area varies substantially from year to year depending on availability of surface water deliveries of Central Valley Project (CVP) water delivered through the Westlands Water District (WWD). During years when WWD receives most of its CVP water allocation, groundwater provides a minor portion of irrigation requirements. During years of severe drought, like 2013 through 2016, groundwater pumping increases substantially to make up for shortfalls of surface water deliveries. Based on the Water Supply Assessment (WSA) prepared for this MND, it is estimated that the "safe yield" of the groundwater resource, or the average volume of groundwater that can be pumped annually within the WWD service area without lowering groundwater levels over the long term, is in the range of 135,000 to 200,000 acre-feet. This is equivalent to approximately 0.24 to 0.35 acre-feet per year per acre over the 568,000 irrigable acres within WWD's service area (WRP 2019).

The Aquamarine Solar Project will be constructed over a two year period, resulting in water demand of 182.5 acre-feet per year (afy), or 0.1 afy/acre. This volume of groundwater pumping is well below the 0.24 to 0.35 acre-feet "safe yield" or the average annual pumping volume that can occur without lowering groundwater levels. Therefore, the groundwater pumped during project construction would not substantially decrease groundwater supplies or contribute to the lowering of the local groundwater table level.

Project Operation

During project operation, non-potable water will be required for activities such as panel cleaning, watering sheep, washing or rinsing equipment, and other operational uses. As described in section *2.2 Project Description*, the combined water usage from all operational activities is estimated to total 32.01 acre-feet annually over the 1,825-acre project site.

Operational supplies will be provided by Westlands Water District (WWD) through its existing system of lateral pipelines for conveyance of imported surface water. Under the WWD's Municipal and Industrial (M&I) Regulations, an applicant may apply for and receive up to 5 acre-feet for water for M&I use. The District has estimated that solar development requires 3-5 acre-feet per year per 160 acres. In order to provide for solar projects greater than 160-acres in size, the WWD has established an exception to the M&I limit whereby solar development would be eligible to receive up to 5 acre-feet per year for each 160 acres developed. The estimated 32.01 acre-feet per year of operational water consumption for the project is equivalent to 2.81 acre-feet per quarter section (160 acres). Since this is well within the 5.0 acre-feet per year of imported surface water per quarter section that the project would be eligible to receive under WWD's M&I rules, there will be no need to augment surface water supplies with groundwater for project operations.

Temporary periodic curtailment of surface water supplies to meet the project's operational demands is not currently foreseen. However, in the unlikely event that such unforeseen curtailment may occur in the future, possibly in the event of a prolonged severe drought, the relatively small volumes of untreated water that would be required for project operations would likely be obtained from the existing groundwater well on the site. In the unlikely event that such backup groundwater supplies to the project were also to be curtailed at the same time, the relatively small volumes of untreated water required would be purchased from alternative sources and trucked to the site. (See section *4.19 Utilities and Service Systems* for discussion.) . The 32.01 acre-feet per year of operational demand water would be equivalent to 0.018 acre-feet per acre per year, or 0.5 to 0.8 percent of safe yield of the groundwater basin of 0.24 to 0.35 acre-feet per acre per year. This very low level of temporary demand for groundwater supplies would not decrease groundwater supplies or contribute to the lowering of the local groundwater table level.

The Aquamarine Solar Project would result in less than one percent increase in impervious surface coverage of the site at the dispersed equipment pads and small parking area. The solar panels themselves would be elevated above ground level with permeable vegetation covered soils beneath. Thus the solar arrays would not displace runoff, and rainwater falling from edges of the panels would spread to vegetated areas beneath the arrays and percolate into the ground. The minimal addition of impervious surfaces would not prevent rainfall from percolating into the underlying soils. The runoff from these surfaces would be displaced to immediately adjacent vegetated areas and would be readily absorbed into the ground. Therefore, project operation would not interfere with groundwater recharge at the project site.

Project Decommissioning

Untreated water would be required during decommissioning, although the volume of water required is expected to be less than required during the construction phase. Since vegetative cover would be maintained on the site during deconstruction, there would be relatively little exposed soil that would require watering for dust suppression. Similarly, water would not be required for soil conditioning during grading. The source of water during decommissioning is expected to be from the existing well

on the western boundary of the site. The total groundwater pumped during decommissioning is expected to be substantially less than the estimated 365 acre-feet required during project construction. Even assuming that water demand during decommissioning would be same as during construction, this would represent an average volume of about 0.2 acre-feet per acre over the 1,825-acre project site, over the course of two years or less. Since the safe yield of the groundwater basin is approximately 0.24 to 0.35 acre-feet per acre per year, the project water demands during decommissioning would not result in overpumping or exceedance of the safe yield of the groundwater basin. In summary, the groundwater pumped during decommissioning would not decrease groundwater supplies or contribute to the lowering of the local groundwater table level.

In summary, the Aquamarine Solar Project would not decrease groundwater supplies or interfere substantially with groundwater recharge, and thus the impact of the Aquamarine Project on the sustainable groundwater management of the basin would be *less than significant*.

Gen-Tie Line

Less-than-Significant Impact. During construction of the Gen-Tie Line, water would be needed for dust suppression, cleaning, and in mixing of concrete for tower foundations. Non-potable water would be purchased from local water purveyors and hauled to each tower site, temporary access driveway, and staging area. The overall acreage subject to temporary disturbance would be relatively small (~125 acres) and would occur at isolated locations over the 8.7 miles of gen-tie corridor, or equivalent to approximately 14.4 acres of disturbed area per mile. Assuming overall water use would be similar to that of solar development, or 0.2 acre-feet per acre, the total water demand for gen-tie construction would be approximately 25 acre-feet. This would be equivalent to the irrigation requirements of about 10 acres of agricultural land for one year (assuming the average WWD water application rate of 2.5 afy per acre). If all of the water requirements for gen-tie construction were obtained from groundwater, this very small amount of groundwater pumping over the substantial length of the Gen-Tie Line would have a negligible effect on groundwater levels.

During operation of the Gen-Tie Line, very little water would be used in maintenance and repair activities. While the Gen-Tie Line would be constructed over the groundwater basin of the San Joaquin Valley, the total area of impervious surfaces resulting from the Gen-Tie Line would be very small (less than 1.0 acre), consisting mainly of concrete footings for the monopoles, which would not interfere with groundwater recharge.

In summary, the construction and operation of the Gen-Tie Line would require the use of relatively small volumes of water. While some or all of the water demand may be provided by groundwater, the volumes involved would be very small and would have a negligible effect on groundwater supplies. The Gen-Tie Line would result in a very small increase in impervious coverage, and would not interfere with groundwater recharge.

In summary, the Gen-Tie Line would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge, and thus the impact of the Gen-Tie Line on the sustainable groundwater management of the basin would be *less than significant*.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:

i. Result in substantial erosion or siltation on- or off-site?

Aquamarine Solar Facility

Less-than-Significant Impact with Mitigation Incorporated. There are no natural drainage courses on the Aquamarine project site or in the vicinity, with the nearest natural water body being the Kings River located approximately 2 miles east. There are several irrigation canals and drainage ditches that run through or adjacent to the project site, including canals/ditches along Laurel Avenue, the 25th Avenue alignment, and the Avenal Cutoff Road frontage, as well as small ditches in the southeastern portion of the project site. The Aquamarine Solar Project includes no proposal to substantially modify the ground contours or surface drainage patterns on the site, or alter the existing irrigation canals and ditches that run through and adjacent to the project site.

The installation of the project solar facilities would involve site clearing, rough grading, soil compaction, establishment of temporary construction staging areas, trenching for solar arrays, and construction of internal access driveways. Since the existing site topography is virtually level, only minor grading would be required for the project. Ground preparation would include tilling and grading to smooth out existing agricultural furrows, followed by compaction with rollers. Finished grades would be designed to provide for positive site drainage. As discussed in the section *2.2 Project Description*, site clearing and soil preparation would occur incrementally and would not take place until a given area is needed for the next construction phase, which typically would comprise the next solar block or array in a predetermined sequence. Vegetative cover would be retained as long as possible to minimize exposed soils and reduce potential for erosion and wind-blown dust. Once vegetation is removed, the exposed and disturbed soil would be susceptible to erosion from wind and rain. During the decommissioning phase, the soil on the project site would again be subject to exposure and disturbance resulting in potential erosion by water and wind, although existing vegetation would not be removed. Unless mitigated, the potential for erosion and siltation impacts would be potentially significant.

In order to mitigate the potential erosion and sedimentation impacts associated with project construction and decommissioning to less-than-significant levels, the following mitigation measure shall be implemented in conjunction with the Aquamarine Solar Project:

> ***Mitigation Measure HYD-1: Stormwater Quality Protection.*** *Prior to construction grading and prior to the decommissioning, the applicant shall be required to file a "Notice of Intent" (NOI) with the SWRCB to comply with the General Construction Permit and prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP for each project phase shall be prepared by a licensed engineer and shall detail the treatment measures and best management practices (BMPs) to control pollutants that shall be implemented and complied with during the construction and post-construction phases of solar development. The SWPPP(s) required for decommissioning shall specify BMPs to be implemented during that final project phase. The construction contracts for each project phase, and for the decommissioning phase, shall include the requirement to implement the BMPs in accordance with the SWPPPs. The SWPPPs will*

specify such practices as: designation of restricted-entry zones, sediment tracking control measures (e.g., crushed stone or riffle metal plate at construction entrance), truck washdown areas, diversion of runoff away from disturbed areas, protective measures for sensitive areas, outlet protection, provision mulching for soil stabilization during construction, and provision for revegetation upon completion of construction within a given area. The SWPPPs will also prescribe treatment measures to trap sediment once it has been mobilized, such as straw bale barriers, straw mulching, fiber rolls and wattles, silt fencing, and siltation or sediment ponds. Upon completion of each solar block, the finished grades beneath and around the finished rows of solar panels will be revegetated with a native seed mix. The reestablished vegetated cover would stabilize the soils and minimize the potential for post-construction erosion. The SWPPPs are subject to approval by the Central Valley Regional Water Quality Control Board (CVRWQCB), which makes the final determination on which BMPs are required for the project. The construction contracts for each project phase, and for the decommissioning phase, will include the requirement to implement the BMPs in accordance with the SWPPPs, and proper implementation of the specified BMPs is subject to inspection by the Regional Board staff.

In summary, the implementation of Mitigation Measure HYD-1 in conjunction with the Aquamarine project would reduce the potential erosion and siltation impacts resulting from the project to *less-than-significant* levels.

Gen-Tie Line

Construction of the Gen-Tie Line would involve soil-disturbing activities such as leveling and excavation for tower footings and grading for the temporary access road. Although the potential for erosion and siltation is reduced in the Gen-Tie Line due to the flat terrain, the impact would be potentially significant unless mitigated. With implementation of Mitigation Measure HYD-1 above, the impact would be reduced to *less-than-significant* levels.

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Aquamarine Solar Project

Less-than-Significant Impact. The Aquamarine Solar Project would result in less than one percent increase in impervious surface coverage of the site, which in turn would result in a negligible increase in localized runoff. The impervious surfaces created by the project would include the concrete pads for inverters and transformers, and the footings and pads for the on-site O&M building and substation, and the small paved parking area in the operations yard. The maintenance driveways of the project would be surfaced with permeable gravel to allow continued percolation of rainfall into the underlying soil. As shown in Table 1 in section *2.2 Project Description*, the project would cover 0.06 percent of the site with impervious surfaces, leaving 99.94 percent of the site permeable for percolation of runoff, including over 92.2 percent in vegetative cover and 7.7 percent in permeable gravel driveways.

Since the impervious surfaces of the dispersed equipment pads and small parking area would not prevent percolation into previously permeable underlying soils, the slight volume of runoff from these facilities would be displaced to immediately adjacent vegetated areas where this very small

amount of runoff would be readily absorbed into the ground. The solar panels themselves would be elevated above ground level with permeable vegetation covered soils beneath. Thus the solar arrays would not displace runoff, and rainwater falling from edges of the panels would spread to vegetated areas beneath the arrays and percolate into the ground.

The terrain of the project site is virtually flat, with a maximum gradient of 0.3 percent across the site. Under current conditions, rainfall percolates into the soil with little or no runoff leaving the site. The Aquamarine Solar Project would result in no substantial modification of existing site grades. During normal rain events, runoff from impervious surfaces would be absorbed by the adjacent vegetated ground and percolate into the soil. During more intense or prolonged storm events, the ground would become saturated and relatively minor volumes of stormwater may temporarily pond on the surface and gradually percolate into the ground, as occurs under existing conditions. Due to the virtually level ground conditions, and the complete coverage of the site with pervious soils to absorb rainwater, the conditions that would allow for stormwater to be mobilized and concentrated in sustained runoff flows do not exist on the site under pre-project conditions. The very minor introduction of small areas of impervious surfaces distributed throughout the site would not have a discernable effect on drainage runoff patterns on the site, and would not result in flooding on or off the site.

In summary, the project's minimal alteration of the virtually level site terrain, and the very minor project coverage of the site with impervious surfaces, would have no discernable effect on runoff patterns on the site. Therefore, drainage and flooding impacts associated with the Aquamarine Solar Project would be *less than significant*.

Gen-Tie Line

The gen-tie line would result in placement of very few permanent features on the ground surface. These features would consist primarily of concrete footings for monopoles, which would add a negligible amount of impervious surface area. The very small volume of additional runoff from these impervious surfaces would be readily absorbed into the ground adjacent to these features. There is no potential for gen-tie line to result in increased flood hazard. Therefore, the drainage and flooding impacts associated with the Gen-Tie Line would be *less than significant*.

iii. 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?

Aquamarine Solar Project

Less-than-Significant Impact. As discussed in item 'c.ii' above, the addition of 0.06 percent impervious coverage at the Aquamarine project site would result in a negligible effect on runoff patterns at the site, and are unlikely to generate runoff flows that would leave the site. The irrigation canals that run through and adjacent to the site were designed and constructed to convey large volumes of irrigation water through the area. Under existing conditions, these canals capture incidental rainwater that falls on or immediately adjacent their banks. However, there is no existing system of drainage ditches that conveys water from agricultural fields to these canals. The Aquamarine Solar Project does not need an internal stormwater drainage system since rainfall

would percolate directly into the ground at the site. Given that the impervious surfaces introduced by the project would be located in the site interior, away from the adjacent irrigation canals, there will be little if any additional runoff generated by the project at would incidentally enter these canals. Therefore, these canals would continue to have sufficient capacity to accept the negligible flows that might leave the project site during a major storm event.

With respect to the issue of polluted runoff, the project would not introduce substantial sources of stormwater pollutants, such as oil, grease, metals, and debris typically associated with stormwater pollution generated on urban streets and parking lots. The very minor leaks of oil or lubricants from maintenance vehicles and equipment used at the project would be mitigated through the implementation of Mitigation Measure HAZ-1 which would ensure that hazardous materials used in project construction and decommissioning are handled, stored, and disposed of in accordance with the HMBP and SWPPP required to be implemented in conjunction with the project, with oversight by the responsible agencies. Therefore, the impacts associated with the potential for additional sources of polluted runoff to be generated by the project would be less than significant.

In summary, the impact associated with the potential for the Aquamarine Solar Project to create or contribute runoff water which would exceed the capacity of stormwater drainage systems or provide substantial additional sources of polluted runoff would be *less than significant*.

Gen-Tie Line

The Gen-Tie Line would result in a very small amount of new impervious surface area at the dispersed monopole sites, and would not result increased runoff or flooding potential. The operation of the Gen-Tie Line would involve periodic inspection, maintenance, and repair activities which would involve travel to the tower sites by maintenance vehicles which could leak minor amounts of oil or lubricants. Since almost all of surrounding areas would consist of natural or cultivated pervious soil cover, the potential for the very small amounts of these pollutants to become entrained in stormwater runoff and be conveyed to downstream water bodies would be small. In addition, the Gen-Tie Line would be subject to the pollution control measures contained in the SWPPP for the project, which would also include measures that address hazardous materials employed during construction.

In summary, the impact associated with the potential for the Gen-Tie Line to create or contribute runoff water which would exceed the capacity of stormwater drainage systems or provide substantial additional sources of polluted runoff would be *less than significant*.

iv. Impede or redirect flood flows?

Aquamarine Solar Facility

No Impact. Neither the Aquamarine project site nor other lands in the project vicinity are located within the flood zones for the 100-year or 500-year events, as mapped by the Federal Emergency Management Agency (FEMA). FEMA's Flood Insurance Rate Map (FIRM) covering the project site indicates that the project site is entirely located within Zone X, which applies to areas "[d]etermined to be outside the 0.2% annual chance (500-year) floodplain" (FEMA 2009a). The nearest location of the 100-year floodplain is approximately 1.5 miles east along the Kings River (FEMA 2009b).

The California Department of Water Resources (DWR) administers the Awareness Floodplain Mapping project, the purpose of which is to identify flood hazard areas for areas that are not mapped under FEMA's National Flood Insurance Program (NFIP), and to provide the community and residents an additional tool in understanding potential flood hazards currently not mapped as a regulated floodplain. In DWR's mapping, floodplains are shown simply as flood prone areas without specific depths and other flood hazard data. The nearest DWR flood zone is mapped as a long strip of land running parallel to and northeast of the California Aqueduct, which is located approximately 8 miles southwest of the Aquamarine project site at its nearest point (DWR 2018).

In summary, no portion of the project site is subject to flooding during the 100-year or 500-year events. Since the Aquamarine Solar Project is not subject to potential flooding hazard, the project would have *no impact* with respect to impeding or redirecting flood flows.

Gen-Tie Line

No Impact. No part of the Kings County portion of the gen-tie corridor is located in a FEMA-mapped flood zone for the 100-year or 500-year events. The nearest mapped 100-year flood zone is located in Fresno County 0.2 miles west of the west end of the Gen-Tie Line. The nearest mapped 500-year flood zone is located south of the City of Huron approximately 6 miles north of the Gen-Tie Line. The nearest DWR flood zone is mapped as a long strip of land running parallel and northeast of the California Aqueduct, which is located approximately 2 miles southwest of the Gen-Tie Line at its nearest point (DWR 2018).

In summary, no part of the Kings County portion of the Gen-Tie corridor is subject to flooding during the 100-year or 500-year events. Since the Gen-Tie Line is not subject to potential flooding hazard, it would have *no impact* with respect to impeding or redirecting flood flows..

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. Within the San Joaquin Valley, there are substantial areas that are subject to inundation flooding in the event of a dam failure at a reservoir in the region. Portions of Kings County located to the east and northeast of the Aquamarine project site and Gen-Tie corridor are subject to potential inundation in the event of the failure of dams located in the Sierra Nevada. The Pine Flat Dam, located upstream on the Kings River, and the Terminus Dam on the Kaweah River, are the only dams in the region which, if breached, might cause flooding of significance within the affected areas. (The mapped inundation areas are shown on Figure HS-7 in the Health and Safety Element of the 2035 Kings County General Plan.) The failure of the Pine Flat Dam would result in a potential inundation area that could extend to within approximately 1.0 miles east of the Aquamarine project site and 1.5 miles east of the Gen-Tie corridor, with the western edge of the inundation zone generally corresponding to the west side of the Kings River 100-year flood zone (Kings County 2010e).

A failure of the Terminus Dam on the Kaweah River could inundate an area extending as far southwest as Kansas and 10th Avenues to the south of the City of Hanford, approximately 13 miles east of the Aquamarine project site and 15 miles east of the Gen-Tie corridor (Kings County 2010e). In summary, the neither the Aquamarine project site nor the Gen-Tie corridor is located within the mapped inundation zones for any of the reservoirs in the region, and therefore would not be subject to risk of flooding in the unlikely event of dam failure. There are no other impoundments or diked areas nearby, and therefore the project area would not be subject to risk of flooding due to levee failure.

With respect to tsunamis, neither the Aquamarine project site nor the Gen-Tie corridor would be subject to inundation from potential tsunamis generated in the Pacific Ocean due to their inland location more than 75 miles from the coast, and given their elevations at over 200 feet above sea mean level.

Seiches are seismically-induced waves in an enclosed body of water such as a lake or reservoir. Severe seismic shaking can cause impounded water to spill beyond the banks and inundate surrounding lands. There are no open bodies of water in the project vicinity with the exception of the wastewater settling ponds for NAS Lemoore, which are located 2.2 miles north of the Aquamarine project site, and 4.4 miles north of the Gen-Tie corridor. These ponds are relatively shallow, and in the unlikely event of seismic shaking severe enough to result in overspill, the spilled water would flow down-gradient toward the Kings River to the east. The Aquamarine project site and Gen-Tie corridor are located up-gradient and are topographically higher than the settling ponds, so there is little or no potential that spilled water from the ponds would reach the Aquamarine project or Gen-Tie corridor.

In summary, the Aquamarine Solar Project and Gen-Tie Line would not be subject to flooding due to dam failure, tsunami, or seiche, and thus would not be at risk of release of pollutants from such potential inundation. Thus there would be *no impact* in terms of hazards associated with such events.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The Aquamarine project site and Gen-Tie corridor are located within the Tulare Lake Hydrologic Basin Planning Area, for which the Basin Plan was revised most recently in July 2016. As noted above, the projects would be required to adhere to NPDES storm water runoff control requirements during construction and operation. The Aquamarine Solar Project and Gen-Tie Line would not include any other waste discharges that could conflict with the Basin Plan.

The Sustainable Groundwater Management Act (SGMA), passed in 2014, requires that all medium to critically over drafted subbasins identified by DWR be managed by a groundwater sustainability agency (GSA). The GSA is responsible for locally managing the groundwater subbasin through the development and implementation a Groundwater Sustainability Plan (GSP). Medium and high priority groundwater subbasins are required to submit their GSP by 2022 and critically overdrafted subbasin are required to submit their GSP by 2020. As the primary water purveyor and local agency overlying the Westside Subbasin, Westlands Water District is the designated GSA for the subbasin. DWR designated the Westside Subbasin as a critically overdrafted basin which requires WWD to

prepare a Groundwater Sustainability Plan by January 31, 2020. There is currently no sustainable groundwater management plan in effect which covers the project area. (However, as discussed under item 'b' above, the volumes of water required for construction and operation of the Aquamarine Solar Project and Gen-Tie Line would be less than the currently estimated safe yield of the groundwater basin of 0.24 to 0.35 acre-feet per acre.) Thus the Aquamarine Solar Project and Gen-Tie Line would not conflict with a groundwater management plan.

In summary, the Aquamarine Solar Project and Gen-Tie Line would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan and thus would have *no impact* in this regard.

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4.11 LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Physically divide an established community?	☐	☐	☐	■
b) 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?	☐	☐	☐	■

Setting

Aquamarine Solar Facility and Gen-Tie Line

Existing Land Use

The Aquamarine project site consists of agricultural fields with related features such as irrigation canals, ditches, pipelines, standpipes, power lines, agricultural wells and pump stations, and unimproved agricultural roads. In recent years, the site has typically been cultivated for winter wheat during the wet season and left fallow during the dry season.

The lands surrounding the Aquamarine project site consist mainly of agricultural lands along with related irrigation canals, ditches, and unimproved farm roads (see Figures 2 and 3). The completed Westside Solar Project Phase 1 is located 0.5 miles north at the southwest corner of Avenal Cutoff Road and 25th Avenue. Directly to the north, across Avenal Cutoff Road, are the Kent South, Orion, and Mustang solar generating facilities and associated substations and switching stations. North of Avenal Cutoff Road on the east side of 25th Avenue, there is an agricultural processing facility located 1.7 miles north of the Aquamarine site, and the Henrietta substation and peaker plant located 2.1 miles north of the project site. To the east of the project site are a series of five dispersed agricultural residences located along and near 22nd Avenue. These residences are located 1.3 to 1.8 miles from the eastern boundary of the Aquamarine site. The nearest ranch complex is the Shannon Ranch located approximately 2.0 miles southwest at the corner of Avenal Cutoff Road and Lincoln/Gale Avenue. The Shannon Ranch includes 20 housing units. The Stone Land Company Ranch, located on the south side of Nevada Avenue, approximately 5.0 miles southwest of the Aquamarine site, includes two dwellings and other ranch buildings.

The nearest population centers include the community of Stratford located 3.0 miles east, the City of Lemoore located 7.0 miles northeast, the Santa Rosa Rancheria located 7.5 miles east, the City of Huron located 9.0 miles west, and the community of Kettleman City located 12.0 miles south. Naval Air Station Lemoore (NASL), and its associated base housing, is located 3.2 miles north of the project site. The Aquamarine project site partially located within an NASL flight approach/departure zone, and is within the Military Influence Area for NASL.

The Kings County segments of the Gen-Tie Line extend approximately 8.7 miles through agricultural lands. Commencing at the southern end of the Aquamarine project site, the Gen-Tie Line alignment runs south along the 25th Avenue alignment for 2.5 miles to Nevada Avenue. The Gen-Tie line then turns westward and runs along the north side of Nevada Avenue through agricultural fields for 6.2 miles to the Fresno County line just west of Avenal Cutoff Road. The only built features along the 8.7-mile Gen-Tie Line consist of two dwellings and farm buildings at the Stone Land Company Ranch, located on the south side of Nevada Avenue 1.4 miles east of the Fresno County line. The Gen-Tie Line then extends a further 6.3 miles along the north side of Jayne Avenue to the Gates Substation in Fresno County.

Planning Context

2035 Kings County General Plan

The "Land Use Map" of the *2035 Kings County General Plan Land Use Element* shows the land use designation of the eastern and northeastern 754 acres of the project site as "Exclusive Agriculture – 40 acre," and the remaining 1,071 acres of the site as "General Agriculture – 40 acre." The "Exclusive Agriculture – 40 acre" designation generally applies to areas within flight paths of NASL. Both land use designations fall under the broader General Plan category of Agricultural Open Space. The lands traversed by the Gen-Tie Line are largely designated "General Agriculture – 40 acre," with a small segment along Nevada Avenue near the 28th Avenue alignment designated as "Exclusive Agriculture – 40 acre." In addition to a range of agricultural uses and ancillary activities, the General Plan allows solar voltaic generating facilities within the Agricultural Open Space areas of the County, as set forth in LU Policy B7.1.3. Energy producing facilities are allowed in the Exclusive Agriculture zone where such facilities would not create a hazard for aircraft, as set forth in RC Policy A1.2.4.

Kings County Development Code

As designated in the Kings County Zoning Plan, the entire Aquamarine site and all the lands traversed by the Gen-Tie Line are zoned "AG-40 General Agricultural-40" (Kings County 1964). As provided in Article 4 of the Kings County Development Code, commercial solar photovoltaic electrical generating facilities are permitted in this zoning district subject to a granting of a Conditional Use Permit by the Kings County Planning Commission. Public utility uses such as transmission lines are permitted uses in this zoning district (Kings County 2016).

Article 11, Section 1112(B)(2) of the Kings County Development Code requires that commercial-scale solar photovoltaic electrical facilities conform to specified standards. Most of these standards relate to agricultural land. The required standards, and the project's conformity with the standards, are addressed in detail in Section *4.2 Agriculture and Forestry Resources*.

NAS Lemoore Joint Land Use Study

The NAS Lemoore Joint Land Use Study (JLUS) involved a multi-agency effort managed by the Department of Defense (DOD) for cooperative land use planning between NAS Lemoore and adjacent communities to provide for compatibility between future community growth and the training and operational missions of the military installation. Since DOD has no regulatory authority for local land use outside the boundaries of the naval air station, the JLUS also includes planning recommendations for consideration by local jurisdictions.

The noise contour mapping prepared for the JLUS shows bands of noise contours exceeding 60 dB CNEL which correspond closely to the flight corridors surrounding the airfield (JLUSPC 2011). The aircraft noise corridor is reflected in the *2035 Kings County General Plan* "Land Use Map," which designates lands within a 3-mile buffer zone from the installation, plus the noise-impacted areas (exceeding 70 dB CNEL) south of the buffer zone, as "Exclusive Agriculture – 40-acre minimum (AX)." The intent of this land use designation is to provide a safety buffer zone around the base by limiting and discouraging intensive agricultural and structure-based land uses that may pose increased risks to inhabitants and base operations (Kings County 2010a). The JLUS also identifies height obstruction limits near NAS Lemoore, with the limits in a given area depending on its location relative to landing approach zones. The entire Aquamarine Solar Project site is mapped as lying just outside Height Restriction Zone "D" which specifies height limits for ground structures of 500 feet above the ground surface (JLUSPC 2011).

Solar generating facilities are specifically addressed in JLUS Recommendation 17, which states: "Establish Minimum Technical Standards for Renewable Energy Facilities Located within NASL Overlay Zones I, II, and III (JLUSPC 2011, p. 2-51). The concern is with "solar farms creating excessive glare from the reflection of the sun" (JLUSPC 2011, p. 2-9). The main concern is with concentrating solar thermal technologies such as lenses or mirrors on a large scale with their reflective characteristics and tall tower collectors. However, "if there is no central collection tower, the new solar panels can be made non-reflective and arrays could be installed to not cause any height or reflective issues" (JLUSPC 2011, p. 2-12).

Environmental Evaluation

a) Would the project physically divide an established community?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. Neither the Aquamarine Solar Project site nor the Gen-Tie corridor is located within or near an established community, so the proposed solar and gen-tie facilities would not physically divide any such community. As such, there is *no impact* in this regard

b) Would the project 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?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. The potential for the Aquamarine Solar Project and Gen-Tie Line to conflict with the Kings County 2035 General Plan and Kings County Development Code, as well as the applicable land use recommendations of the NAS Lemoore Joint Land Use Study (JLUS), is discussed below.

Kings County

General Plan

The 2035 Kings County General Plan designates the eastern and northeastern 754 acres of the project site as "Exclusive Agriculture – 40 acre," and the remaining 1,071 acres of the Aquamarine site, and the entire Gen-Tie corridor as "General Agriculture – 40 acre." These land use designations fall under the broader General Plan category of Agricultural Open Space which permits a range of agricultural uses and ancillary activities, as well as solar voltaic generating facilities. Therefore, the planned installation of solar PV generating facilities within the project site would be consistent with the General Plan Land Use Map.

Zoning

As designated in the Kings County Zoning Plan, the entire Aquamarine Solar Project site and the Gen-Tie corridor are currently zoned "AG-40 General Agricultural-40." As provided in Article 4 of the Kings County Development Code, utility-scale photovoltaic electricity generation is a conditionally permitted use in this agricultural zoning district. In addition, utility structures such as the Gen-Tie Line are permitted uses in all Agricultural zoning districts. Therefore, the Aquamarine Solar Project and the Gen-Tie Line would be consistent with the development code upon the granting of the subject Conditional Use Permit for the projects.

Section 1112.B.2 of the Kings County Development Code establishes specific requirements that must be satisfied for the granting of a Conditional Use Permit for a solar generating facility. Since most of the requirements pertain to agriculture, the project's ability to meet each of the requirements is addressed in section *4.2 Agriculture and Forestry Resources*. In summary, all of the requirements in Section 1112.B.2 would be satisfied by the Aquamarine Solar Project.

NAS Lemoore

Safety and Noise

The mapping prepared for the JLUS shows that the Aquamarine project site lies within the aircraft flight path and the eastern half of the site is subject to noise levels greater than 60 dBA CNEL. As discussed above, the County General Plan 'AX – Exclusive Agriculture' designation was specifically created to reflect the NAS Lemoore landing approach flight patterns and the corresponding high noise conditions on those lands. While the intent of the AX land use designation is to limit intensive land uses that may pose increased risks to inhabitants and base operations, low intensity solar PV generating facilities are not noise sensitive land uses and thus would not be incompatible with relatively higher risks and noise levels from overhead flight operations. The noise from military aircraft overflights is addressed in detail in section *4.13 Noise*.

Height Obstruction Limits

The JLUS also identifies height obstruction limits near NAS Lemoore, with the limits in a given area depending on its location relative to landing approach zones. The entire Aquamarine Solar Project site is mapped as lying just outside Height Restriction Zone "D" which has a height limit for ground structures of 500 feet above the ground surface (JLUSPC 2011). The tallest structures within the project would consist of structural elements associated with the on-site substation that would be as

high as 40 feet. Most project structures would consist of solar arrays, inverter pads, and meteorological stations that would be less than 10 feet high. The Gen-Tie Line also lies entirely outside the NASL Height Restriction Zones, and the height of the monopoles would range from 100 to 180 feet. Thus, even if the Aquamarine project site and Gen-Tie corridor were located within a Height Restriction Zone, the tallest structural features would be well within the 500-foot height limit and would not create operational obstructions.

Reflected Glare

The JLUS addresses concerns with aviation hazards from reflection and glare. Solar facilities are mentioned specifically for their potential to produce reflective surfaces, but the JLUS acknowledges that the main concern was with highly reflective mirrors used in concentrating solar thermal facilities. The JLUS acknowledges that "if there is no central collection tower, the new solar panels can be made non-reflective and arrays could be installed to not cause any height or reflective issues" (JLUSPC 2011, p. 2-12). Indeed, solar PV employs glass panels that are designed to maximize absorption and minimize reflection to increase electricity production efficiency. To limit reflection, solar PV panels are constructed of dark, light-absorbing materials, and are given an anti-reflective coating or textured surface. With the addition of the anti-reflective coating or treatment, the reflectivity can be reduced to less than 4 percent of incoming sunlight. Since the solar panels would have low reflective intensity and would be covered with anti-reflective coating, any resulting glare effects would not be so bright as to disrupt aircraft operations in the area.

It is noted that a glint and glare study using the Sandia Laboratory's Solar Glare Analysis Tool (SGHAT) was prepared for the adjacent Mustang Two Solar Project MND in August 2016. In the analysis, impacts from solar glare were given three ranks: potential for permanent eye damage; potential for temporary after-image (a lingering image of the glare in the field of view); and low potential for temporary after-image. Results from the analysis indicated that pilots flying over and near the solar facility would experience a low potential for a temporary after-image, and the potential would be limited to early morning from approximately April through September. The low potential for temporary after-image level is generally considered to be safe for pilots (Kings County 2017). The results of this glint and glare analysis are considered to be applicable to the Aquamarine Solar Project, which is directly adjacent to the Mustang Two Solar Project site. Therefore, it is concluded that the solar PV panels to be installed within at the Aquamarine Solar Project would not pose a potential hazard to aircraft operations at NAS Lemoore due to reflected glare. No portion of the Gen-Tie corridor is crossed by a mapped flight track for NASL aircraft operations, and the Gen-Tie Line would not include reflective surfaces that could produce glare and thus would not pose a potential safety hazard to aviation in this regard (see section *4.9 Hazards and Hazardous Materials* for further discussion of reflected glare).

In summary, the Aquamarine Solar Project and Gen-Tie Line would be consistent with the applicable provisions of the Kings County 2035 General Plan and the County Development Code, and would also be consistent with the local recommendations of the NAS Lemoore Joint Land Use Study. Therefore, the Aquamarine Solar Project and Gen-Tie Line would result in *no impact* with respect to potential conflict with any land use plan, policy, or regulation of an agency adopted for the purpose of avoiding or mitigating an environmental effect.

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4.12 MINERAL RESOURCES

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☐	■
b) 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?	☐	☐	☐	■

Environmental Evaluation

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. Southern Kings County and western Fresno County include several oil and natural gas fields. The nearest wellfield in the project vicinity is the abandoned Westhaven oil field located west of the Aquamarine project site near the Fresno County line. There are a number abandoned oil wells associated with the Westhaven oil field, the nearest three of which are located between 1.0 and 2.0 miles west and northwest of the Aquamarine project site. Along the Gen-Tie Line there are 5 abandoned oil wells located within one mile of Nevada Avenue, the nearest of which is approximately 500 feet south of Nevada Avenue. The nearest natural gas fields are abandoned fields located southeast of Kettleman City, approximately 15 miles south of the Aquamarine project site and 12 miles south of the Gen-Tie corridor. There are no mapped oil or natural gas fields, or former oil or natural gas wells, within or adjacent to the Aquamarine project site or the Gen-Tie corridor. Therefore, the Aquamarine Solar Project and Gen-Tie Line would not result in the loss of availability of a known oil or gas resource (DOGGR 2018).

There are no active sand or gravel extraction sites or other surface mining sites in Kings County; however, there are two inactive mine sites within the County. The first is the Pires Mine Site, a surface mining site located 10 miles northeast of the Aquamarine project site, which is no longer actively mined but has not been officially closed. The second is the Hewitson Mine, an aggregate mine locate 20 miles southwest of the Aquamarine project site. This mine has a permit and an Interim Management Plan, and mineral production could begin at any time. Both of these mines are located substantial distances from the Aquamarine project site and Gen-Tie corridor, so construction of the Aquamarine Solar Project and Gen-Tie Line would not result in the loss of availability of these mineral resources in the region.

The nearest active surface mining sites are in western Fresno County and consist of two large sand and gravel operations near Coalinga, located approximately 20 miles southwest and 25 miles west of

the Aquamarine project site. There are no sand and gravel deposits in the project area, in either Kings or Fresno counties, and construction of the Aquamarine Solar Project and Gen-Tie Line would not result in the loss of availability of sand and gravel resources in the region.

In summary, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* upon availability of known mineral resources.

b) Would the project 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?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. Mineral resources are addressed in the Resource Conservation Element of the 2035 Kings County General Plan. The General Plan recognizes that oil and natural gas production in the County has diminished and does not designate any areas of the County for oil and gas recovery. Similarly, the General Plan notes the low potential for surface mining in the County and does not designate any areas of the County as important aggregate or other mineral recovery sites (Kings County 2010b). Therefore, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* with respect to loss of availability of important mineral recovery sites designated on local land use plans.

REFERENCES – MINERAL RESOURCES

DOGGR 2018 — California Department of Conservation (DOC), Division of Oil, Gas, and Geothermal Resources (DOGGR). 2018. *Division of Oil, Gas, and Geothermal Resources Well Finder*. Available at https://www.conservation.ca.gov/dog/Pages/Wellfinder.aspx

Kings County 2010b — County of Kings. 2010. *2035 Kings County General Plan – Resource Conservation Element*. Adopted January 26, 2010. http://www.countyofkings.com/home/showdocument?id=3112

4.13 NOISE

Would the project result in:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Generation of a substantial temporary or permanent increase in ambient 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?	☐	☐	■	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	■	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	■	☐

The discussion of potential noise and vibration impacts in this section is based on the *Noise and Vibration Assessment* prepared by Illingworth & Rodkin in December 2018. The noise report, which is contained in Appendix D of this document, includes a detailed discussion on the fundamental concepts of noise and vibration, as well as definitions of acoustical terms used in the noise report and in the following discussion.

Noise Setting

The existing noise environment in the project area is typical of rural agricultural environments. The primary noise sources in the project vicinity include: 1) traffic on County roads (Avenal Cutoff Road, 25th Avenue, Laurel Avenue, and Nevada Avenue; 2) agricultural equipment and crop dusters; and 3) occasional overflights by military aircraft from Naval Air Station Lemoore.

Aquamarine Solar Project

The Aquamarine Solar Project site is located approximately 6.0 miles south of the airfield at Naval Air Station Lemoore (NASL), and is included in the study area for the NAS Lemoore Joint Land Use Study. The project site is located within the NASL flight pattern and falls between the 60 dBA and 75 dBA CNEL noise contours as mapped in the NAS Lemoore Joint Land Use Study (JLUSPC 2011, p. 2-11.).

There are no noise-sensitive residential receivers within 1.0 mile of the Aquamarine project site. The nearest residences consist of a series of 5 dispersed rural residences located along 22nd Avenue and Laurel Avenue at distances ranging from 1.3 to 1.8 miles east of the Aquamarine site. The next nearest residences consist of the 20 single-family dwellings at the Shannon Ranch complex located at the southwest corner of Avenal Cutoff Road and Lincoln/Gale Avenue approximately 2.0 miles southwest of the project. The next nearest sensitive receptors consist of the base housing at NAS Lemoore, with the nearest base housing located on the north side of SR-198 approximately 3.0 miles north of the project

site. The Stone Land Company Ranch, located along the south side of Nevada Avenue opposite the gen-tie corridor and 5.0 miles southwest of the Aquamarine site, includes two ranch dwellings.

In order to document noise conditions at the receptors in the Shannon Ranch complex, long-term noise measurements were conducted at the ranch between Monday, December 14, 2015 and Tuesday, December 15, 2015. The sound level meter was placed approximately 80 feet from the center of Avenal Cutoff Road to represent the noise exposure at residences in the immediate vicinity of the roadway. The noise measurements documented the existing daily trend in noise levels due to traffic. Day-night average noise levels at this site were 75 dBA L_{dn}. Typical daytime hourly average noise levels were approximately 66 to 72 dBA L_{eq}.

Gen-Tie Line

The only noise sensitive receivers along the Gen-Tie corridor are two dwellings located at the Stone Land Company Ranch on the south side of Nevada Avenue east of Avenal Cutoff Road. In order to document conditions at the receptors in the Stone Land Company Ranch complex, a long-term noise measurement was conducted alongside Nevada Avenue at the ranch between Monday, December 14, 2015 and Tuesday, December 15, 2015. The sound level meter was placed approximately 27 feet from the center of Nevada Avenue to represent the noise exposure at residences in the immediate vicinity of the roadway. The noise measurements documented the existing daily trend in noise levels due to traffic. The day-night average noise level at this site was 67 dBA L_{dn}. Typical daytime hourly average noise levels were approximately 57 to 69 dBA L_{eq}.

Environmental Evaluation

a) Would the project result in generation of a substantial temporary or permanent increase in ambient 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?

Aquamarine Solar Project

Less-than-Significant Impact. Noise would be generated during the construction, operations, and decommissioning phases of the Aquamarine Solar Project. The potential for temporary and permanent noise sources from the project to exceed applicable noise standards is discussed below for each phase of the project.

Construction Phase

During the construction phase, the two main sources of noise would be from on-site grading and construction, and from off-site traffic generation, each of which is discussed in turn below.

On-Site Construction Noise

The construction noise levels would depend on the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise sensitive receptors. In accordance with the 2035 Kings County General Plan Noise Element policies, a significant noise impact would occur if

construction noise levels exceed 55 dBA L_{eq}, and if they exceed the ambient noise environment by 5 dBA L_{eq} or more.

Construction noise levels would be highest during site grading, excavation, and installation of solar equipment. Hourly average noise levels generated by construction equipment associated with the project are calculated to range from 85 dBA L_{eq} to 87 dBA L_{eq} measured at a distance of 50 feet, assuming that all equipment proposed for each construction phase are operating simultaneously. Construction generated noise levels drop off at a rate of about 6 dBA per doubling of distance between the source and receptor (I&R 2018). The nearest noise-sensitive residential land uses are located over 1.0 mile to the east. At this distance, the maximum construction noise levels reaching the nearest residences would range from 45 dBA L_{eq} to 47 dBA L_{eq}, taking into consideration the attenuation of sound with distance from the noise source. These construction-related noise levels would be well below the applicable County noise standards and would be lower than ambient daytime noise levels at the nearest receptors. Therefore, the temporary increase in ambient noise levels resulting from project construction activities would not exceed applicable noise standards and the impact would be *less than significant*.

Construction Traffic

The analysis of construction traffic noise used a baseline of existing Average Daily Traffic (ADT) volumes on the affected roadway segments, and added worker and truck volumes generated during project construction. It was calculated that the highest noise level increase on the affected roadways due to project construction traffic would be less than 0.3 dBA L_{dn}/CNEL above existing traffic noise conditions without the project at the most affected roadway – Avenal Cutoff Road.

Under 2035 Kings County General Plan Noise Policy B1.2.1, the project would result in a significant noise impact if: a) the noise level increase is 5 dBA L_{dn}/CNEL or greater, where the pre-project noise level is less than 60 dBA L_{dn}/CNEL; or b) the noise level increase is 3 dBA L_{dn}/CNEL or greater, where the pre-project noise level between 60 and 65 dBA L_{dn}/CNEL; or c) the noise level increase is 1.5 dBA L_{dn}/CNEL or greater, where the pre-project noise level between 65 dBA L_{dn}/CNEL or greater (Kings County 2010f).

As noted in 'Noise Setting' above, noise measurements taken by Illingworth & Rodkin alongside Avenal Cutoff Road at the Shannon Ranch indicate that pre-project noise levels at that location are 75 dBA L_{dn}. This noise level is considered to represent worst-case ambient noise levels along the affected roadways. The 0.3 dBA L_{dn}/CNEL temporary increase in noise levels from project construction traffic is well below the 1.5 dBA increase that would indicate a significant impact where ambient levels are 65 dBA L_{dn}/CNEL or greater, per the County's noise standards. Therefore, the temporary increase in ambient noise levels resulting from construction traffic generated by the Aquamarine Solar Project would not exceed applicable noise standards, and the impact would be *less than significant*.

Operational Phase

During the operational phase of the Aquamarine Solar Project, the two main sources of noise would be from on-site activities, and from off-site traffic generation, each of which is discussed in turn below.

On-Site Noise Sources

Noise sources at the project site would include inverters and transformers necessary to convert the generated power to collection voltage. The 250 MW Aquamarine Solar Project would include a total of 100 inverter/transformer pads (i.e., 1 per 2.5 MW of output). The predicted noise level attributable to one inverter/transformer is 52 dBA measured at a distance of 50 feet from the equipment (I&R 2018). The operation the 100 inverters/transformers at the project would result in an estimated worst-case noise level of 72 dBA, measured at a distance of 50 feet (Ibid.).

The Aquamarine Solar Project would include one substation, located at the southern end of the site, for the purpose of stepping up voltage levels to 230-kV for transmission on the Gen-Tie Line. Sources of audible noise within a substation include equipment such as transformers, reactors, voltage regulators, circuit breakers and other intermittent noise generators. Among these sources, transformers, reactors, and circuit breakers have the greatest potential for producing noise. The broadband sound from fans, pumps and coolers has the same character as ambient sound and tends to blend with the ambient noise. Reactors are similar to transformers in terms of audible noise and would generate noise levels of about 40 dBA L_{eq} at 200 feet (SLO County 2011, p. AP. 4-114). The highest noise levels would be produced by circuit breakers, which would occur infrequently when breakers are thrown to protect the system during an electrical fault due to line overloads. The resultant noise would be impulsive in character, being loud and short in duration. The maximum impulse noise level from the breakers would be approximately 105 dBA L_{max} at 50 feet (Ibid.).

2035 Kings County General Plan, Noise Policy B1.1.1 requires that appropriate noise mitigation measures be included in a proposed project design when the proposed new use will include non-transportation noise sources that would exceed the County's "Non-Transportation Noise Standards" (Noise Element Table N-8). The daytime noise limits enforced at residential properties are 75 dBA L_{max} and 55 dBA L_{eq} (Kings County 2010f). The inverters/transformers at the project would operate only during daytime hours when the solar facility is generating power. There would be no noise generated by the project at night, when County noise limits are 5 dBA more restrictive (i.e., 70 dBA L_{max} and 50 dBA L_{eq}).

Noise from "point" sources decreases at a rate of 6 dBA with each doubling of the distance between the noise source and receptor (I&R 2018). Based on the worst-case noise level estimate of 72 dBA L_{max} at a distance of 50 feet from the noise source, predicted noise levels at the nearest residential land uses located 1.0 mile from the project site are calculated to be less than 32 dBA L_{max}/L_{eq}. These noise levels would be inaudible above ambient noise levels. The estimated noise levels from project operations would be below the County's 75 dBA L_{max} and 55 dBA L_{eq} noise limits for residential uses. Therefore, the permanent increase in ambient noise levels resulting from operation of the Aquamarine Solar Project would not exceed applicable noise standards and the impact would be *less than significant*.

Operational Traffic Noise

Traffic generated during project operations would be very light, given the small number of workers that would travel to the site on an intermittent basis. It was calculated that the highest traffic noise increase attributable to project operational traffic on the affected roadways would be less than 0.1 dBA L_{dn}/CNEL above existing traffic noise conditions without the project at the most affected roadways – Laurel Avenue and Avenal Cutoff Road. The noise levels would be well below the

applicable impact thresholds, discussed above, and would not be noticeable to the potentially affected sensitive receptors. Therefore, the permanent increase in ambient noise levels resulting from operational traffic generated by the Aquamarine Solar Project would not exceed applicable noise standards and the impact would be *less than significant*.

Decommissioning Phase

Noise levels generated during deconstruction activities would be similar to those generated during construction except that some of the noisiest construction equipment, such as pile drivers and vibratory rollers, would not be used during decommissioning. As is the case with construction noise, the on-site noise generated during decommissioning would be well below County noise standards at the nearest sensitive receptors. Traffic volumes generated during decommissioning would be similar to those associated with construction, and the resulting noise levels would be well below applicable County standards as well. Therefore, the temporary noise levels resulting from decommissioning activity and traffic associated with the project would not result exceed applicable noise standards and the impact would be *less than significant*.

In summary, the temporary and permanent noise increases resulting from the construction, operations, and decommissioning phases of the Aquamarine Solar Project would not exceed applicable noise standards, and the impact would be *less than significant*.

Gen-Tie Line

Less-than-Significant Impact. Noise would be generated during the construction and operational phases of the Gen-Tie Line. The potential for project-generated noise to exceed applicable noise standards is discussed below for each phase of the project.

Construction Phase

On-Site Construction Noise

The Kings County segments of the Gen-Tie Line are planned to be constructed over a- 6-month period beginning in late 2019. The general sequence of activities for construction of the Gen-Tie Line would involve the following steps: clearing of right-of-way and staging areas; construction of access roads; installation of tower footings and structures; and conductor stringing. These construction activities would proceed in step-wise fashion from one end of the Gen-Tie corridor to the other, and as such the duration of construction at any given location would be relatively brief.

The noisiest construction activity would occur during site preparation of tower sites and staging areas, when most construction equipment would be used. This equipment typically includes dozers, graders, compactors, auger drill rigs, and trucks, which produce maximum noise levels ranging from 80 to 85 dBA at 50 feet. The maximum noise level generated by several pieces of equipment operating continuously at a distance of 50 feet would be about 90 dBA. Throughout the Gen-Tie route, most residential receptors would be located at least 1.3 miles from construction activity, except at the Stone Land Company Ranch where there are two single-family dwellings located approximately 200 feet south of the nearest edge of the gen-tie right-of-way. At this distance, the maximum noise level at the nearest residence would be 78 dBA, given that maximum noise levels would decrease at the rate of 6 dBA per doubling of distance from a point source. The applicable Kings County Noise Element standard at the Stone Land Company Ranch is 80 dBA Lmax (i.e., 75 dBA base standard increased by

5 dBA to encompass the ambient 76 dBA per Kings County Noise Element). Therefore, the maximum noise levels of 78 dBA that would occur at the two residential facades at the ranch from operation of conventional construction equipment would not exceed the applicable Kings County noise standard.

Helicopter construction would be used for stringing pilot wires for conductors between monopoles. The operation of a helicopter for construction would generate maximum noise levels of approximately 80 dBA at 200 feet (USBLM 2013, p. 3.23-11). The stringing of conductor pilot wires by a helicopter would occur along the pole line located near the center of the right-of-way. The nearest conductor arm would be at least 30 feet from the edge of the right-of-way, or 230 feet from the nearest residence at the Stone Land Company Ranch. At this distance, the maximum noise level at the nearest residence would be 79 dBA. As mentioned, the applicable Kings County Noise Element standard at the Stone Land Company Ranch is 80 dBA L_{max} (i.e., Kings County base standard of 75 dBA L_{max} plus 5 dBA to encompass the 76 dBA L_{max} ambient noise level). Therefore, the maximum noise levels of 79 dBA that would occur at the two residential facades at the ranch from helicopter construction would not exceed the applicable Kings County noise standard.

In summary, the maximum noise levels of 79 dBA that would occur at the two residential facades at the Stone Land Company Ranch during Gen-Tie construction would not exceed the applicable Kings County noise standard. Therefore, the temporary increase in noise levels resulting from Gen-Tie Line construction would not exceed the applicable noise standards and the impact would be *less-than-significant*.

Construction Traffic

The construction of the Gen-Tie Line would involve truck trips for hauling equipment and materials to and from the construction sites, and also commute trips by construction workers arriving and departing the construction sites. During the busiest construction phase, when all construction activities would be ongoing, the maximum workforce would be 59 workers, and there would be an average of 15 daily deliveries of equipment and materials. This would result in 108 worker commute trip ends and 30 haul trip ends daily. The worker trips would be concentrated at the beginning and end of work shifts, resulting in 59 AM trips and 59 PM trips. The haul truck trips would occur throughout the day and would average about 4 trips per hour for an 8-hour workday.

The roadway network in the vicinity of the Gen-Tie Line is subject to relatively low traffic volumes typical of the rural setting. Since these roadways currently serve local agricultural operations, dispersed dwellings, and agricultural processing and support facilities, the areas along the roads are currently subject to occasional noise from farm equipment and heavy trucks, as well as light passenger vehicle traffic. The addition of haul truck traffic and commute traffic associated with Gen-Tie Line construction would likely be noticeable in the areas immediately adjacent to the travel routes. The noise associated with this traffic would increase noise levels by less than 1 dBA L_{dn} over ambient noise levels along roadways subject to the construction traffic, which mainly include Nevada Avenue and Jayne Avenue (in Fresno County). Although noise from individual truck pass-bys would be noticeable to nearby receptors in the rural noise environment, the noise level increase would be less than the smallest incremental noise threshold considered significant (i.e., 1.5 dBA L_{dn} where ambient noise is over 65 dBA L_{dn}) in Kings County. Since the total duration of Gen-Tie construction in Kings County would be approximately eight months, the noise from construction traffic would be temporary, and the minor and short-term increase in traffic noise resulting from Gen-Tie Line construction would be negligible. Therefore, the temporary increase in noise levels

resulting from Gen-Tie Line construction traffic would not exceed the applicable noise standards and the impact would be *less-than-significant*.

In summary, the temporary increases in ambient noise levels resulting from the construction activity and construction traffic generated by the Gen-Tie Line would not exceed the applicable noise standards and the impact would be *less than significant*.

Operational Phase

The primary noise sources associated with the operation of the Gen-Tie Line would be noise emitted by maintenance activities and by the Gen-Tie Line itself. Maintenance activities would include annual visual inspections of the transmission lines and access roads. These activities would typically involve the use of light duty trucks, although helicopters may sometimes be used for this purpose. The maintenance and inspection activities would occur infrequently and noise from truck or helicopter pass-bys would be short in duration.

Within Kings County, the nearest sensitive receivers to the Gen-Tie Line are the two residences at the Stone Land Company Ranch. These residences are located 200 feet from the nearest edge of the gen-tie right-of-way on the opposite side of Nevada Avenue. The operation of a helicopter maintenance and inspection would generate maximum noise levels of approximately 80 dBA at 200 feet (USBLM 2013, p. 3.23-11). The nearest conductor arm would be at least 30 feet from the edge of the right-of-way, or 230 feet from the nearest residence. At this distance, the maximum noise level at the nearest residence would be 79 dBA. The applicable Kings County noise standard at the Stone Land Company Ranch is 80 dBA L_{max} (i.e., 75 dBA base standard increased by 5 dBA to encompass the ambient 76 dBA per Kings County Noise Element). Therefore, noise generated by maintenance and inspection of the Kings County segments of the gen-tie line would not exceed the applicable noise standard.

Once completed, the operation of the Gen-Tie Line would generate very little traffic. During annual inspection and maintenance activities, light utility trucks would traverse local roadways to access transmission towers and maintenance roads. The additional traffic noise generated by these occasional maintenance trips would be negligible and would not result in increased average noise levels along the affected roadways. Therefore, the potential traffic noise associated with Gen-Tie Line operation would exceed the applicable noise standard.

Once energized, the high-voltage conductors of the Gen-Tie Line would be subject to corona discharge. This involves the breakdown of air into charged particles caused by the electrical field at the surface of a conductor, which can result in a crackling or hissing noise and very small amounts of light. Audible noise from corona discharge varies depending on the voltage of the line and is locally intensified by irregularities on the conductor surface such as scratches or water drops. Wet weather conditions often increase corona discharge due to accumulation of raindrops, fog, frost or condensation on the conductor surface which causes surface irregularities and result in small electrical discharges. In addition to noise generation, corona also results in power loss in the transmission line. Therefore, transmission lines are designed to include sufficiently large conductors and smooth-edged hardware, which reduces the potential for corona. For a double-circuit 230-kV transmission line in a 100-foot wide right-of-way, maximum noise levels that would be generated by corona discharge during wet conditions would be 37 dBA at the edge of the right-of-way (CPUC 2009, p. 4.10-12). The corona noise generated during dry conditions would be less than 25 dBA and would be barely audible

(SLO County 2011). The nearest dwellings to the Gen-Tie Line consist of two existing residences along the south side of Nevada Avenue at the Stone Land Company Ranch and would be located 200 feet from the nearest edge of the gen-tie right-of-way. At this distance, the noise from corona discharge would not be audible by the nearest receivers even under wet conditions. All other residential receptors in Kings County would be located at least one mile from the transmission lines. Therefore, the potential noise impact due to corona discharge along the Kings County segments of the Gen-Tie Line would not exceed the applicable noise standard.

In summary, the permanent increases in ambient noise levels resulting from the operation of the Gen-Tie Line would not exceed the applicable noise standards and the impact would be *less than significant*.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Aquamarine Solar Project

Less-than-Significant Impact. The construction of the Aquamarine Solar Project may generate perceptible vibration in the immediate vicinity of the project site when heavy equipment or impact tools are used. Groundborne vibration levels would be highest during site preparation activities and when the solar arrays are installed, given that the cylindrical steel posts (or H-beams) will be driven into the ground using truck-mounted vibratory drivers.

Vibration is measured as peak particle velocity (PPV) in inches per second. The equipment to be used at the project site that would result in the greatest vibration includes sonic pile drivers, vibratory rollers, and bulldozers. The vibration levels typically produced by a sonic pile driver can reach 0.170 in/sec PPV at a distance of 25 feet. Vibratory rollers and large bulldozers typically generate vibration levels ranging from of 0.089 to 0.210 in/sec PPV at a distance of 25 feet. Vibration levels would vary depending on soil conditions, construction methods, and equipment used (Illingworth & Rodkin 2018).

The California Department of Transportation recommends a vibration limit of 0.5 in/sec PPV for buildings that are structurally sound and designed to modern engineering standards, 0.3 in/sec PPV for buildings that are found to be structurally sound but where structural damage is a major concern, and a conservative limit of 0.08 in/sec PPV for ancient buildings or buildings that are documented to be structurally weakened. No ancient buildings or buildings that are documented to be structurally weakened are present near the project site. Therefore, the applicable impact threshold for groundborne vibration would be levels exceeding 0.3 in/sec PPV at the nearest receptors.

Within the project vicinity, the nearest structures to the construction activity would be: 1) the solar arrays at the Westside Solar Project Phase 1 located 0.5 miles north of the nearest construction activity; and 2) the solar arrays and substation at the Kent South solar generating facility at the northwest corner of Avenal Cutoff Road and 25th Avenue, which would be at least 0.4 miles from the nearest on-site construction activity. The potential for greatest vibration would be during heavy equipment movement and vibratory pile driving of the support posts for the solar arrays, which would generate vibration levels of 0.210 and 0.170 in/sec PPV, respectively, at 25 feet from the source. At a

distance of 0.4 miles, these vibration levels would decrease to 0.001 in/sec PPV, respectively, at the nearest receiver. These vibration levels would be well below the 0.3 in/sec PPV impact threshold for sound structures, and would also be well below the 0.08 in/sec PPV limit applicable to structurally weakened structures. The majority of construction activity at the project site would occur well beyond these distances from the nearest structures. Therefore, groundborne vibration from project construction would have *no impact* on existing structures in the project vicinity.

People can also be adversely affected by excessive vibration levels. The level at which humans begin to perceive vibration is 0.015 inches per second. Vibrations at 0.2 inches per second are considered bothersome to most people, while continuous exposure to long-term PPV is considered unacceptable at 0.12 inches per second (Illingworth & Rodkin 2018). There are no residential receptors in immediate project vicinity. The existing solar facilities located 0.4 miles to the north, identified above, may occasionally involve the presence of workers as close as 0.4 miles from the nearest construction activity on the project site. At this distance, the greatest vibration from the nearest project construction activity would decrease to 0.001 in/sec PPV, which would not be perceptible to those workers. Therefore, project construction activities would have not expose persons to excessive vibration levels.

In summary, the heaviest construction equipment that would be used for construction of the Aquamarine Solar Project would produce vibration levels that would be far below the vibration levels necessary to cause damage to the nearest off-site buildings, or to be perceptible to the nearest off-site persons. Therefore, the project would not result in the exposure of persons to, or generation of, excessive groundborne vibration levels. As such, the potential vibration impacts due to construction activities associated with the Aquamarine Solar Project would be *less than significant*.

Gen-Tie Line

Less-than-Significant Impact. For Gen-Tie construction, the heaviest equipment would consist of bulldozers, loaded trucks, and drill rigs (for excavating holes for tower footings), all of which would generate a PPV of 0.089 inches per second at 25 feet. (Non-conventional construction techniques, such as blasting, are not expected to be required.) Along the Kings County Gen-Tie segment, there are two residences located within 350 feet of the Gen-Tie right-of-way. These comprise the two dwellings at the Stone Land Company Ranch on the south side of Nevada Avenue, which are 200 feet from the Gen-Tie right-of way, and 265 feet from the nearest planned monopole. Other structures at the ranch are at least 340 feet from the Gen-Tie right-of-way. At a distance of 200 feet, the heaviest equipment would generate a PPV of 0.009 inches per second, which is well below the levels where potential building damage could occur (i.e., 0.3 and 0.08 in/sec), and below the threshold of human perception for vibration (i.e., 0.015 in/sec). Therefore, the potential vibration impacts from equipment used in construction of the Kings County segment of the Gen-Tie Line would be *less-than-significant*.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Aquamarine Solar Project

Less-than-Significant Impact. The Aquamarine Solar Project is not located near a public airport or public use airport, and is not located within an airport land use plan area. The nearest public or public use airports include the Hanford, Corcoran, and Coalinga municipal airports, and the Harris Ranch airfield, all of which are located 17 miles or more from the project site.

The Aquamarine Solar Project site is located 6.0 miles south of the airfield at Naval Air Station Lemoore (NASL), and is included in the study area for the NAS Lemoore Joint Land Use Study (JLUS). The project site is located within the NASL flight pattern and is mapped as land subject to noise levels lower than 75 dBA CNEL as mapped in the NAS Lemoore Joint Land Use Study. The eastern one-eighth of the project site is exposed to noise levels just over 70 dBA CNEL, while the western three-fourths of the site is exposed to noise levels of less than 65 dBA CNEL (JLUSPC 2011, p. 2-11). The Kings County General Plan noise standard for the noise-sensitive outdoor areas of commercial or industrial developments is 65 dBA CNEL if the noise is from transportation sources such as aircraft overflights (Kings County General Plan Noise Element Table N-7). However, the proposed solar facilities are not considered noise-sensitive land uses and will have no permanent employees stationed on-site that would utilize outdoor use areas. Although Kings County has not established a noise limit for outdoor use areas that are not noise sensitive, noise levels exceeding 76 dBA CNEL are considered hazardous to health as determined by the US Environmental Protection Agency (US EPA 1974). Aircraft overflights would expose construction workers, who would be on the site temporarily, and the operational workers, who would visit the site periodically, to noise levels of just over 70 dBA CNEL, and well below the 76 dBA CNEL threshold. Therefore, the project would not expose workers on the project site to excessive noise levels from flight operations as NAS Lemoore. As such, the impact of the Aquamarine Solar Project's exposure to noise from airport operations would be *less than significant*.

The Aquamarine Solar Project site is not located within the vicinity of a private airstrip. There are five airstrips within a 5-mile radius of the site, the nearest of which is 2.0 miles west at the Shannon Ranch. As such, the project would not expose people working at the project site to excessive noise levels associated with the operation of a private airstrip. Therefore, the Aquamarine Solar Project would be associated with *no impact* due to private airstrips in the vicinity.

In summary, the impact associated the Aquamarine Solar Project's exposure to noise from airport operations associated with a private airstrip or public airport or public use airport or would be *less than significant*.

Gen-Tie Line

Less-than-Significant Impact. The nearest municipal airports to the Kings County segments of Gen-Tie Line include the Hanford, Corcoran, and Coalinga airports, all of which are located between 15 and 20 miles from the Gen-Tie corridor at their nearest points. In addition, the airfield at NAS

Lemoore is located 9 miles from the Gen-Tie corridor. The flight operations associated with these airports are too far from the Gen-Tie corridor to result in excessive noise levels to workers on the Gen-Tie Line. Therefore, workers on the Gen-Tie project would not be exposed to excessive noise levels from flight operations associated with public or public use airports, as well as NAS Lemoore, and the impact would be *less-than-significant*.

There are five private airstrips within about 5 miles of the Gen-Tie Line. The nearest airstrip is at the Stone Land Company Ranch on Nevada Avenue, where the north end of the runway is about 1,500 feet from the Gen-Tie right-of-way. Occasional takeoffs and landings at this airstrip would generate noise at the nearby section of the Gen-Tie corridor. However, the noise levels from small private aircraft would not be excessive, and construction workers would be present in the vicinity for relatively brief periods during Gen-Tie Line construction, and rarely during inspection and maintenance activities once the Gen-Tie Line is completed. These workers would not be exposed to excessive noise levels from flight operations associated with private airstrip at the Stone Land Company Ranch. The remaining four airstrips are located from 3 to 5 miles from the Gen-Tie Line. At these distances, flight operations associated with the airstrips would not result in excessive noise levels at the nearest segments of the Gen-Tie Line. Therefore, workers on the Gen-Tie Line would not be exposed to excessive noise levels from flight operations associated with private airstrips, and the impact would be *less-than-significant*.

In summary, the impact associated with the Gen-Tie Line's exposure to noise from airport operations associated with a private airstrip or public airport or public use airport or would be *less than significant*.

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4.14 POPULATION and HOUSING

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	■
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

Environmental Evaluation

a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Aquamarine Solar Facility

No Impact. The Aquamarine Solar Project would not include a residential component so it would not directly induce population growth in the area. The Aquamarine project would involve a maximum construction workforce of about 430 workers during the peak period of construction. Upon completion, no permanent operational staff would be stationed at the solar facility, with up to 10 workers visiting the site on any given day to perform inspection, maintenance, repair, and panel cleaning duties. The construction and operational workers are expected to be drawn from the existing labor pool in the region, and would not directly result in population growth. Since the solar facility operations would be managed by a contractor, the Aquamarine Solar Project would likely be one of several solar facilities serviced by these workers. Thus the Aquamarine Solar Project would result in the need for additional personnel if it resulted in the contractor exceeding its capacity to continue to service its client solar facilities at existing staffing levels with the addition of the Aquamarine Solar Project. In the event that new workers are needed to service the project, and if such workers may relocate to the area for the employment opportunities resulting from the project, it is anticipated that such relocating workers would find ample housing choice from the existing inventory of homes in the region. Therefore, the Aquamarine Solar Project would result in *no impact* with regard to potential inducement of substantial unplanned population growth in the area.

The Aquamarine Solar Project would not result in the extension or roads or urban utilities (e.g., water and sewer) to lands not currently served by urban infrastructure, and thus would not induce unplanned urban development into the rural area of the County. Therefore, the Aquamarine Solar Project would not induce indirect growth through extension of urban infrastructure.

In summary, the Aquamarine Solar Project would result in *no impact* with respect to growth inducement, either by way of population growth or by extension of urban infrastructure.

Gen-Tie Line

No Impact. The Gen-Tie Line would not include a residential component so it would not directly induce population growth in the area. During construction, the Gen-Tie Line is expected to require a total workforce of about 59 workers over a construction period of approximately 8 months for the Kings County segment. It is expected that most of construction personnel would be drawn from the communities in the region, although some specialized workers may need to be brought in from outside the area and be temporarily lodged in local hotels. Upon completion, the operation of the Gen-Tie Line would require no on-site staff, and would receive intermittent inspections and maintenance activities by utility workers. Thus Gen-Tie Line would not induce substantial population growth in the area.

The Gen-Tie Line would not result in the extension or roads or urban utilities (e.g., water and sewer) to lands not currently served by urban infrastructure, and thus would not induce unplanned urban development into the rural area of the County. Therefore, the Gen-Tie Line would not induce indirect growth through extension of urban infrastructure.

In summary, the Gen-Tie Line would result in *no impact* with respect to growth inducement, either by way of population growth or by extension of urban infrastructure.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Aquamarine Solar Facility

No Impact. There are no residential buildings on the Aquamarine Solar Project site or within a 1.3 mile radius of the site. The nearest agricultural residences are five dispersed dwellings located 1.3 to 1.8 miles to the east along 22nd Avenue. The Shannon Ranch complex is located 2.0 miles west, and the base housing complex at NAS Lemoore located 3.0 miles north. None of these residential properties would be removed or encroached upon as a result of the Aquamarine Solar Project. Thus The Aquamarine project site contains no housing or people that could be displaced by the project, and therefore the project would not necessitate the construction of replacement housing. The Aquamarine Solar Project would have *no impact* with regard to displacement of existing people or housing.

Gen-Tie Line

No Impact. There are no dwellings within the Gen-Tie corridor, with the nearest residences consist of two dwellings at the Stone Land Company Ranch on the south side of Nevada Avenue, on the opposite side of the roadway from the Gen-Tie corridor. Neither of these dwellings would be removed or encroached upon by the Gen-Tie Line. Thus the Gen-Tie corridor contains no housing or people that could be displaced by the project, and therefore the Gen-Tie Line would not necessitate the construction of replacement housing. The Gen-Tie Line would have *no impact* with regard to displacement of people existing people or housing.

4.15 PUBLIC SERVICES

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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 for any of the public services:				
i) Fire protection?	☐	☐	☐	■
ii) Police protection?	☐	☐	☐	■
iii) Schools?	☐	☐	☐	■
iv) Parks?	☐	☐	☐	■
v) Other public facilities?	☐	☐	☐	■

Setting

Fire Protection Services

Fire protection for the project area is provided by the Kings County Fire Department (KCFD), which operates 10 fire stations and one headquarters office in Hanford with 88 full-time employees. The Fire Department responds to over 5,100 calls annually, averaging 14 calls daily (KCFD 2019).

The nearest KCFD fire stations to the project site are KCFD Station #10, located in Stratford approximately 2.5 miles east of the Aquamarine project site, and Station #9, located in Kettleman City approximately 12 miles south of the site. Response times from the two nearest stations would range from 4 minutes to 15 minutes depending on the location of the call within the Aquamarine site. Backup response would be provided by Station #7 (south Lemoore) and Station #5 (Armona), which would respond to a call from the site within the KCFD's 20-minute rural response time goal. The KCFD maintains mutual aid agreements with the fire departments of Lemoore and Hanford, and also with the NAS Lemoore Fire Department and Santa Rosa Rancheria Fire (Kings County 2010e).

The KCFD's other responsibilities include: review of building plans for compliance with fire safety requirements; emergency medical response; and preparation and implementation of the County's emergency management plan. Each station conducts assessments of proposed industrial and business facilities to assure compliance with safety and design capacity requirements. Fire stations also handle weed abatement on a complaint basis (KCFD 2019).

The KCFD provides first responder emergency medical service to all County residents. This service does not include advanced life support (paramedic) or emergency transport, which is provided by an exclusive private contractor (currently American Ambulance). Kings County contracts directly with the ambulance company, while the Central California Emergency Medical Services Agency (CCEMSA) is responsible for ensuring adequate levels and quality of ambulance service the region. The ambulance services nearest to the Aquamarine site are located in Lemoore and Hanford.

The Potential Fire Hazards map of the Kings County General Plan Health and Safety Element (General Plan Figure HS-9) shows most of the Aquamarine project site and Gen-Tie corridor as being subject to "Little or No Threat" or "Moderate Threat," while the nearest areas shown as being subject to "High Threat" are around the Shannon Ranch and near the segment of Nevada Avenue near the Fresno County line (Kings County 2009c). The Aquamarine project site and Gen-Tie corridor are not included in a Fire Hazard Severity Zone (FHSZ) as mapped by the California Department of Forestry and Fire Protection (CalFire 2007a, CalFire 2007b).

Law Enforcement Services

Law enforcement services in the project area are provided by the Kings County Sheriff's Department (KCSD) from its headquarters at 1444 West Lacey Boulevard approximately 16 miles northeast of the project site. The Department currently has 148 sworn officers and 101 non-sworn personnel. The County is currently divided into six beat districts with five Sheriff's substations located throughout Kings County. Each beat district has at least one deputy sheriff on duty at all times to serve the unincorporated communities and surrounding County areas. The KCSD has mutual-aid agreements statewide. The Department's response time goal for priority emergency calls is 20 minutes (Kings County 2010e). The response time to the project site would be a maximum of 15 to 20 minutes, and would be quicker when the area deputy is on patrol nearby. The principal crimes committed in Kings County in 2017 were larceny, burglary, aggravated assault, motor vehicle theft, and weapons charges (CDOJ 2019).

The California Highway Patrol (CHP) provides traffic enforcement along State highways and County roadways within Kings County. The nearest CHP area offices are located in Hanford and Coalinga.

Other Public Services and Facilities

Other public services provided in the project area include schools, parks and recreation, libraries, and social services, among other things. The Aquamarine Solar Project and Gen-Tie Line would generate little or no demand for these public services and their related facilities.

Environmental Evaluation

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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 for any of the public services:

i) Fire protection?

Aquamarine Solar Project

No Impact. Construction and operation of the Aquamarine Solar Project is not anticipated to result in an increase in demand of fire protection services leading to the construction of new or physically altered facilities.

Fire Hazards During Construction

During construction, there is a small risk of construction equipment and materials posing potential fire hazards. Construction of the solar facilities, substations, and power collection lines would involve the use of heavy construction equipment, vehicles, generators, and hazardous materials (e.g., fuels, lubricating oils, and welding materials), which pose potential fire hazards. The risk of fire would be primarily related to refueling and operating vehicles and equipment off internal driveways where dry vegetation could be ignited. Welding activities also have the potential to result in the combustion of vegetation, as would smoking by construction workers.

As discussed in section *2.2 Project Description*, construction workers would receive training in fire safety and suppression in order to prevent fire and respond effectively if fire does break out. During solar facility construction, water trucks used for dust suppression would be available for suppression of small fires.

Fire Hazards During Solar Facility Operation

During solar facility operation, equipment such as transformers, inverters, and substation equipment would involve the use of oils (e.g., dialectic or mineral oils and lubricants) and fuels, which would pose potential fire hazards. Maintenance vehicles and panel washing trucks would travel among the solar arrays where low vegetation would be dry in summer and potentially combustible. Overhead power collection lines would pose a fire hazard in the event a conducting object comes in proximity to a line or in the unlikely event that a live-phase conductor (electrical wire) falls to the ground. Smoking by operational personnel would also pose a fire hazard.

The project would include a number of design and operational measures for fire prevention and suppression. The project would be constructed in accordance with the California Fire Code. Electrical equipment such as transformers and inverters would be placed on concrete foundation pads and housed in steel and concrete equipment enclosures, minimizing the risk of electrical sparks that could ignite vegetation in the event of equipment failure. All electrical equipment (including inverters) not located within a larger structure would be designed specifically for outdoor installation, and all electrical equipment would be subject to product safety standards. Portable carbon dioxide (CO_2) fire extinguishers would be mounted at the inverter/transformer pads throughout the project. Maintenance crews would regularly inspect facilities for reliability and safety.

The Aquamarine project would be required to comply with fire safety standards under Section 10-7 of the Kings County Code, under which the regulations of the National Fire Protection Association and the American Insurance Association are applied. The Fire Marshal would review the project plans to ensure compliance with all code requirements and standards. The Building Division of the Kings County Community Development Agency would ensure Fire Code requirements are met

through the plan check process, building permit issuance, construction inspection, and issuance of certificate of occupancy once all of the work has been completed and the final inspection has been approved.

The approval of the Aquamarine Solar Project would be subject to conditions including compliance with the provisions of the Kings County Improvement Standards with respect to emergency vehicle access. As required by the Fire Department, all structures (including solar arrays) must be accessible by fire-fighting equipment and personnel via internal fire access driveways. These internal gravel driveways would consist of a durable dust-free (oiled) surface, in accordance with the Kings County Improvement Standards, which would inhibit the growth of vegetation. The Fire Department also requires minimum of 4 feet of separation between rows of solar modules to allow access by fire suppression personnel. The construction of the 20-foot-wide driveway following the perimeter of the site would act as a fire break between the site and off-site areas, thereby limiting the potential for a fire at the site to spread off-site. The project approval would also include a condition that all detailed project plans are subject to review and approval by the County Fire Marshal to ensure that potential fire hazards are adequately addressed.

As required in Mitigation Measures AG-1: Agricultural Management Plan, AG-2: Soil Reclamation Plan, and HYD-1: Stormwater Quality Protection, the remaining exposed soils over the entire site would be revegetated with native seed mix to prevent erosion and dust generation throughout the entire site, and to sustain continued agricultural production on the western portion of the site through sheep grazing, and also to protect on-site soils for future reclamation upon decommissioning. The vegetative cover would be kept low through mechanical means and also through sheep grazing activity which would reduce fuel load buildup and reduce the potential hazard from grass fires. As with all mitigation measures identified in this document, Mitigation Measures AG-2 and HYD-1 would be imposed as a condition of project approval.

In summary, although the project would result in an incremental increase in demand for Fire Department services, this increase is expected to be small and thus would not result in degradation of service levels or in the need for new or expanded facilities. Therefore, the Aquamarine Solar Project would result in *no impact* related to an increase in fire protection services that would necessitate the alteration or construction of fire stations or other infrastructure to combat fire.

Gen-Tie Line

No Impact. Construction and operation of the Gen-Tie Line is not anticipated to result in an increase in demand of fire protection services leading to the construction of new or physically altered facilities. Fire protection services to the Gen-Tie Line would be provided by the Kings County Fire Department, as well as CalFire and other fire departments in the area that participate in automatic aid or mutual aid agreements. During construction of the Gen-Tie Line, the contractors would be required to implement standard safety plans related to working with electrical equipment; however, medical services from the Fire Department may occasionally be called upon in the event of medical emergencies. Upon completion, the Gen-Tie Line would not introduce any new land uses or population to the area that would increase long-term demand levels for fire protection services.

In summary, although the Gen-Tie Line may result in a small increase in demand for fire protection and medical services, the increases are expected to be small and thus would not result in degradation of service levels or in the need for new or expanded facilities. Therefore, the Gen-Tie

Line would result in a *no impact* related to an increase in fire protection services that would necessitate the alteration or construction of fire stations or other infrastructure to combat fire.

ii) Police protection?

Aquamarine Solar Project

No Impact. Construction and operation of the Aquamarine Solar Project is not anticipated to result in an increase in demand of police protection services leading to the construction of new or physically altered facilities.

Law enforcement services to the Aquamarine solar facility would be provided by the Kings County Sheriff's Department. During construction of solar facility, slow moving trucks could result in temporary congestion near the project entrances, and could pose a safety hazard due to abrupt changes in the speed of traffic flow, or due to slow turning movements across on-coming lanes of traffic. Any temporary traffic disruptions would involve coordination with the Sheriff's Department. The temporary traffic hazards associated with construction of the Aquamarine project are discussed in section *4.17. Transportation*. Any potential traffic hazard impacts would be minimized through implementation of traffic control measures specified in Mitigation Measure TR-1a. The traffic control measures required during construction may result in a minor temporary use of the Kings County Sheriff's Department's resources, but would have *no impact* in terms of necessitating new or expanded Sheriff's Department facilities to maintain adequate service levels.

Once the Aquamarine Solar Project is completed and operational, calls for service from the solar facility are expected to be infrequent, primarily due to the comprehensive security measures included in the design and operation of the solar project. The design features for project security are described as follows. The perimeter of each project phase will be securely fenced and gated to prevent unauthorized access. Electronic surveillance equipment such as infrared security cameras and motion detectors will be installed around the solar facility. The installation and operation of these security features are intended to act as a deterrent to crimes such as theft and vandalism. These project security design features will be operationally integrated with the services of a private security company. The video feeds from the installed surveillance equipment will be transmitted in real time to the off-site security contractor for monitoring. In the event that the surveillance system detects a breach, a security representative would be dispatched to the site.

As such, it is expected that project operations would result in minimal demand on Sheriff's Department operations and would not degrade service levels or result in the need for new or altered Sheriff's Department facilities. Therefore, the Aquamarine Solar Project would result in a minor increase in demand for law enforcement services, and would have *no impact* in terms of necessitating new or expanded Sheriff's Department facilities to maintain adequate service levels.

Gen-Tie Line

No Impact. Construction and operation of the Gen-Tie Line is not anticipated to result in an increase in demand of police protection services leading to the construction of new or physically altered facilities. Police protection services to the Gen-Tie Line would be provided by the Kings Sheriff's Department and the California Highway Patrol. During construction, the Gen-Tie project may

require police services due to possible theft of construction equipment and/or vandalism that might occur during the construction period. Gen-Tie line construction may also require temporary partial closure of roadways, especially where conductors would be strung over public roadways. Deliveries by heavy transport trucks may also require traffic control measures. Any temporary road closures or major traffic disruptions would involve coordination with local law enforcement. The temporary traffic hazards associated with transmission project construction are discussed in section *4.17 Transportation*. Any potential traffic hazard impacts would be minimized through implementation of the traffic control measures specified in Mitigation Measure TR-1b. The traffic control measures required during construction would result in a minor temporary use of Sheriff's Department's resources, and would have *no impact* in terms of necessitating new or expanded Sheriff's Department facilities to maintain adequate service levels.

iii) Schools?

Aquamarine Solar Project and Gen-Tie Line

No Impact. Neither the Aquamarine Solar Project nor Gen-Tie Line would include a residential component and thus will not result in the need for new or expanded school facilities. Therefore, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* on schools. However, the Aquamarine project will pay a school mitigation fee, as mandated by State law for all commercial development.

iv) Parks?

Aquamarine Solar Project and Gen-Tie Line

No Impact. Demand for parks and recreation is mainly generated by residential development. No permanent staff would be stationed at the Aquamarine Solar Facility or the Gen-Tie Line, and the few staff who would visit the solar facility and gen-tie to perform routine maintenance activities would be unlikely to seek out recreational activities while in the project area. As such, the Aquamarine Solar Project and Gen-Tie Line would not increase demand for parks and recreational facilities, and would have *no impact* in terms of necessitating new or expanded parks or recreation facilities to maintain adequate service levels.

v) Other Public facilities?

Aquamarine Solar Project and Gen-Tie Line

No Impact. Neither the Aquamarine Solar Project nor Gen-Tie Line would generate demand for social services, courts, libraries, or other public services. As such, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* in terms of necessitating new or expanded facilities to maintain adequate service levels for other public services.

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4.16 RECREATION

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	■
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	■

Environmental Evaluation

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. Neither the Aquamarine project nor the Gen-Tie Line would include a residential component and thus would not result in substantially increased use of or demand for neighborhood or regional parks, or other recreational facilities. Therefore, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* in terms of causing or accelerating physical deterioration of recreational facilities.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. Neither the Aquamarine project nor the Gen-Tie Line would include recreational facilities, and thus would not result in impacts associated with such facilities. The Aquamarine and Gen-Tie projects would not include a residential component or permanent staff, and thus would not result in increased demand for recreational facilities. As such, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* related to construction or expansion of recreational facilities.

4.17 TRANSPORTATION

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	■	☐
b) Conflict with or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	■	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	■	☐	☐
d) Result in inadequate emergency access?	☐	■	☐	☐

Transportation Setting

Aquamarine Solar Project and Gen-Tie Line

State highways in the vicinity that serve the project area include State Route 198 (SR-198) located to the north, SR-41 located to the east, SR-269 located to the west, and Interstate 5 located to the southwest. The Kings County roads serving the project area include: Avenal Cutoff Road, which passes along the northwest Aquamarine site boundary; Laurel Avenue, which bisects the Aquamarine site from east to west, and; Nevada Avenue along which the Gen-Tie Line would run.

The nearest public use airports in the project area include those at Hanford, Coalinga, and Harris Ranch, all of which are at least 17 miles from the Aquamarine site. The airfield at Naval Air Station Lemoore (NASL) is located 6 miles north of the Aquamarine project site. There are 5 private airstrips in the project area, the nearest of are at the Shannon Ranch, 2 miles west of the Aquamarine site, and the Stone Land Company Ranch, located on the south side of Nevada Avenue opposite the Gen-Tie corridor.

The nearest public transit routes of the Kings Area Rural Transit (KART) are along SR-198 to the north and SR-41 to the east. The nearest existing bikeway runs along the Avenal Cutoff Road frontage of the Aquamarine site, and extends from SR-198 in the north to the Fresno County line to the south (KC 2010d)

Environmental Evaluation

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Roadway Facilities

Transportation policies and programs in Kings County are set forth in the Kings County *2035 General Plan Circulation Element* which establishes Level of Service D as the minimum service level to be maintained on County streets and roadways (Kings County 2010d).

Fresno County has policies which establish Level of Service (LOS) D as the minimum acceptable level of service on urban roads, and LOS C on rural roads (Fresno COG 2014). It is the policy of the California Department of Transportation (Caltrans) to maintain a target LOS at the transition between LOS C and LOS D, while lower LOS is accepted in areas of existing congestion, such as urban highway segments (Caltrans 2002). The traffic generated by the project would conflict with the applicable LOS policies if it results in a degradation of Level of Service to lower than LOS C on a State Highway or a rural County Road in Fresno County, or lower than LOS D on a County Road in Kings County.

Aquamarine Solar Project

Less-than-Significant Impact. As is typical of all PV solar projects, the Aquamarine Solar Project would generate the greatest volume of traffic during the construction phases when substantial numbers or workers are onsite during site preparation, grading, panel installation, and electrical equipment installation for the project. The construction period is also when the greatest number of truck deliveries are made, including deliveries of grading and construction equipment, solar panels, racking systems, electrical equipment, gravel, asphalt, and concrete, among other materials.

Construction Traffic

Since the project would generate the highest traffic volumes during the construction phases, a screening level of analysis was conducted to determine if adverse impacts to roadway system performance would occur, even under temporary conditions during project construction. In order to evaluate worst-case conditions, the traffic generated during the peak construction periods was evaluated to represent project conditions. The peak period of construction activity would occur during a 13-week period when Phases 1 and 2 of construction would overlap (this peak period represents 12.5 percent of the total 104-week duration of construction). During this peak period, there would 430 workers commuting to the project site daily, resulting in a total of 860 daily trips (see Table 2 for a summary of construction vehicle usage by construction phase). For purposes of analysis, it was assumed that no workers would carpool or use transit or shuttle buses.

Construction workers would arrive at the site prior to the 7 AM start time and depart the site between 3 and 4 PM. As such, few if any workers are expected to be on the roadway network between the peak commute periods of 7 to 9 AM or 4 to 6 PM. (Note: Mitigation TR-1a makes it a requirement that the generation of construction-related traffic be minimized during these peak commute periods.) Since project traffic generation during the AM and PM peak periods is therefore expected to be negligible, no evaluation of peak hour traffic impacts was warranted.

Project worker commute traffic was distributed to the roadway system in accordance with a gravity model that considered time and distance factors relative to regional population centers to determine directional trip assignments. The average daily truck traffic estimated for the peak construction period was similarly distributed according to place of origination for each type of delivery. In order to reflect the effect of larger trucks on highway capacity, all truck trips were multiplied by 1.5 to derive Passenger Car Equivalent (PCE) trips generated by trucks. Deliveries were also multiplied by two to reflect inbound and outbound trips.

Table 10, on the next page, shows the effect of project construction traffic on the surrounding roadway network. In order to establish Baseline traffic conditions on the study roadways for 2018, the existing count data for each roadway segment was increased by 1 percent per year from its latest count date. This growth rate is somewhat higher than the statewide increase in traffic volumes on State highways over the 10 year period from 2006 and 2016 (the latest period for which statewide data is available).

In general, the project-generated traffic would be low relative to existing daily traffic volumes on the affected roadways. Table 10 includes only those roadway segments that would be subject to 40 daily project-generated trips (or 20 round trips per day). All other roadway segments would have fewer than 40 daily trips added due to project construction traffic.

As shown in Table 10, none of the affected roadway segments would be subject a change in Level of Service, or an LOS impact. The most heavily affected roadway segment – Laurel Avenue near the central project entrance– would experience a 43 percent increase to daily traffic volumes during the 13-week period of peak construction activity at the project. However, since existing traffic volumes on Laurel Avenue are very low, this increase would not significantly affect roadway performance, which would remain at LOS A. The second most heavily affected roadway segment – Avenal Cutoff Road near the northwest project entrance – would be subject to a 8 percent increase in daily traffic volumes during the peak period of project construction. Other roadways in the vicinity would be subject to temporary increases of 0.2 to 5 percent in overall traffic volumes. The project traffic contributions would be lower during all other periods of construction (representing 87.5 percent of the total construction duration) on all affected roadways.

In summary, project construction traffic would not result in a reduction of service levels on any of the affected roadways, which would remain at LOS B on most roadways, and LOS C on two roadway segments. Thus all roadways affected by project construction traffic would continue to operate at LOS C or better, thus maintaining the County's LOS standard of D as established in the *General Plan Circulation Element,* and also maintaining the LOS C standard applicable on State highways and Fresno County's rural roads. Thus, the increment of traffic volume generated by the Aquamarine Solar Project during construction would represent and *less-than-significant* impact in terms of conflicts with Level of Service policies applicable to the affected roadways.

Operational Traffic

Once the solar facilities are operational, the project-generated traffic would become very light. No permanent staff would be stationed at the Aquamarine solar facility, although operations and maintenance contractors would visit the project on a regular basis to perform inspections, maintenance and repairs. Panel washing crews would work on the site up to four times per year for several weeks at a time, and sheep herders would be on site during the spring to manage sheep grazing in accordance with the project Agricultural Management Plan. There would also be occasional truck deliveries for replacement parts and other materials. On average, it is estimated that up to 10 daily round trips would be generated by the workers on any given day. Truck deliveries would be expected to occur intermittently during the year. The very low volume of worker and delivery truck traffic generated during project operations would have a negligible effect on the performance of the roadway system serving the project, and the impact of Aquamarine

project operational traffic would be *less than significant* in terms of conflicts with Level of Service policies applicable to the affected roadways.

TABLE 10
AQUAMARINE SOLAR PROJECT – CONSTRUCTION TRAFFIC
(BASED ON PEAK CONSTRUCTION PERIOD WHEN CONSTRUCTION PHASES 1 + 2 OVERLAP)

Roadway Segment[1]	Baseline Traffic Conditions				Next LOS Transition (AADT/LOS)[6]	Project Traffic Conditions		
	AADT[2]		Roadway Lanes (Agency)[4]	LOS[5]		Avg. Daily Trips[7]	LOS with Project	LOS Impact Threshold[8] (Impact?)
	Existing	Baseline[3] (2018)						
Avenal Cutoff Road								
- b/n SR-198 & Nevada/Jane	6,231[6]	6,420	2 (KC)	C	13,800/D	503	C	D/E (No)
- b/n Nevada/Jane & SR-269	3,106[6]	3,200	2 (KC)	B	4,200/C	58	B	D/E (No)
Laurel Avenue								
- b/n Avenal Cutoff & SR-41	621[6]	640	2 (KC)	A	4,200/B-C	476	A	D/E (No)
SR-198								
- b/n Avenal Cutoff & SR-41	19,800[9]	19,998	4 (fwy)(CT)	B	39,600/C	314	B	C/D (No)
- b/n SR-41 & 19th Ave.	22,200[9]	22,422	4 (fwy)(CT)	B	39,600/C	124	B	C/D (No)
SR-41								
- b/n SR-198 & Bush St.	15,800[9]	15,958	4 (fwy)(CT)	B	39,600/C	379	B	C/D (No)
- b/n SR-198 & Jackson Ave.	13,000[9]	13,130	2 (CT)	C	13,800/D	313	C	C/D (No)
- b/n Jackson & Nevada Aves.	8,000[9]	8,080	2 (CT)	C	13,800/D	449	C	C/D (No)
- b/n Nevada & Bernard Aves.	7,700[9]	7,777	2 (CT)	C	13,800/D	41	C	C/D (No)
- b/n Bernard Ave. & I-5	21,400[9]	21,614	4 (CT)	B	29,300/C	41	B	C/D (No)
Nevada/Jayne Avenues								
- b/n Avenal Cutoff & SR-269	2,890[10]	3,161	2 (FC)	B	4,200/B-C	80	B	C/D (No)
- b/n SR-269 & I-5	3,610[10]	3,699	2 (FC	B	4,200/B-C	80	B	C/D (No)
- b/n I-5 & SR-33	5,820[10]	6,365	2 (FC)	C	13,800/D	80	C	C/D (No)

[1] Includes only roadway segments with >40 project-generated ADT (i.e., >20 round trips per day).
[2] AADT = Annual Average Daily Trips (= existing traffic volumes on roadways and highways).
[3] Existing AADT was increased by 1% per year from count year to Baseline Year (2018).
[4] Agency abbreviations: KC = Kings County; CT = Caltrans; FC = Fresno County.
[5] Sources: Kings County 2010d; Caltrans 2002; Fresno COG 2014. (Note: Kings County Circulation Element does not define a capacity limit for LOS A for two-lane rural highways; therefore, the capacity limits for LOS A and LOS B are assumed to be 4,200 ADT for both.
[6] Source: KCAG 2018.
[7] Project Daily Trips: Average Day = Average daily trips generated during the peak construction period.
[8] Minimum LOS Standards by Agency: Kings County = LOS D; Caltrans = LOS C; Fresno County = LOS D (urban), LOS C (rural).
[9] Source: Caltrans 2019.
[10] Source: Fresno COG 2013 (reflects 2009 through 2011 counts).

Decommissioning Traffic

As discussed in section *2.2 Project Description*, the level of activity during decommissioning (or deconstruction) of the Aquamarine project is expected to be similar to the activity level during project construction. Thus the number transport vehicle trips required for off-haul of decommissioned materials is expected to be similar to the number of trips required to haul the materials to the site during construction. The number of workers required on-site is also expected to be about the same, while the use of construction equipment would be similar or a little less. For purposes of analysis, it is assumed that traffic generated during decommissioning would be the same as the traffic generated during construction, as shown in Table 10 above. As shown in the table, project-generated traffic volumes would be very low relative to current traffic volumes on the affected roadways, and levels of performance would not be adversely affected by the project decommissioning traffic. At the time of project decommissioning in 25 years, the long-term traffic forecasts for the affected roadways indicates that all roadways will be operating at acceptable service levels at that time (KCAG 2018, Fresno COG 2013). The temporary addition of relatively small volumes of traffic from project decommissioning would have a *less than significant* impact in terms of conflicts with Level of Service policies applicable to the affected roadways at the time of decommissioning.

In summary, the Aquamarine Solar Project would not conflict with any Level of Service policies established by any transportation agency with jurisdiction over roadways affected by project-generated traffic. Therefore, the Aquamarine Solar Project would have a *less-than-significant impact* in this regard.

Gen-Tie Line

Less-than-Significant Impact. During the 6-month construction period for the Kings County portion of the Gen-Tie Line, the work activities would be distributed along the Gen-Tie corridor, with various crews engaged in surveying, ROW clearing, access driveway construction, staging area preparation, tower foundation installation, tower assembly and erection, conductor installation, guard structure installation and removal, and site restoration. The construction of the Gen-Tie Line would involve truck trips for hauling equipment and materials to and from the construction sites, and also commute trips by construction workers.

Deliveries of tower steel, hardware, conductor spools, concrete, and equipment would occur throughout the construction period. The equipment and material deliveries would originate from various locations in northern and southern California, and concrete would be delivered from a ready-mix plant in the Coalinga area. Thus truck deliveries would come from I-5 in the west for regional access and then follow local highways and roads to reach the work sites along the gen-tie line.

Concrete would be delivered to tower sites by concrete mixer trucks for use in construction of the tower footings. As mentioned, it is expected that concrete would be supplied from an existing ready-mix plant located near Coalinga. It is estimated that an average of 125 cubic yards (cy) of concrete would be required at each monopole location Given a concrete mixer truck capacity of 10 cy, an average of 13 concrete deliveries would occur at each tower site. For the 57 tower sites in

Kings County, there would be at total of 741 concrete deliveries over the 133-day construction period, or an average of 5.66 deliveries per day.

Deliveries of tower steel and other materials for tower installation would involve approximately 22 round trips by trucks for each tower. The 57 towers in Kings County would involve a total of 1,254 materials deliveries, or an average of 9.4 deliveries per day on the Kings County Gen-Tie segments. The combined deliveries of concrete and materials would average 15 deliveries per day, or 30 trips ends. To account for large vehicle size, the truck trips are multiplied by 1.5 to derive Passenger Car Equivalent (PCE) trips of 45 trips per day.

Construction workers would generate traffic in commuting to and from the work sites. The Gen-Tie project is expected to have a maximum workforce of approximately 59 construction workers on any given day. Most construction workers are expected to reside in urban centers in the region, which are largely concentrated along the State Route 99 corridor to the east and northeast of the Gen-Tie corridor. Assuming that all 59 workers would all commute solo, the peak traffic generated by construction personnel would be 59 AM trips and 59 PM trips, for a total of 118 daily trip ends.

The combination of daily average truck trips (i.e., 45 PCE trips) plus construction worker commute trips (i.e., 118 daily trips) would result in a total of 163 daily trips on average. These trips would be widely distributed throughout the roadway network. As mentioned, most truck trips would be from I-5 in the west, while most construction workers would commute from population centers to the east and northeast. Thus the truck delivery routes and commute routes would tend to not overlap, except near the construction staging area or the access points to the construction sites. Assuming all worker commute trips occurred during the peak AM and PM periods, the resulting increase in traffic volume would be less than one trip per minute. Truck deliveries would be distributed throughout the day, with an average of 5 PCE truck trips occurring during each peak period. Therefore, the effects of gen-tie construction traffic on roadways and intersections in the area would be minor.

The primary impact associated with Gen-Tie Line construction would be from slow moving construction trucks and the larger turning radii of the trucks compared to passenger vehicles. This may result in intermittent reductions in roadway capacity, but these effects would be temporary and would not result in a significant impact to the roadway service levels. Depending on conditions, restrictions may be placed on heavy truck and oversized vehicle deliveries during the AM and PM peak-hour commute periods. In addition, local transportation agencies may restrict truck traffic to specific haul routes. (See item ‘c’ below for further discussion.)

Once construction of the Gen-Tie Line is completed, the traffic generated during inspection and maintenance of the Gen-Tie Line would be negligible.

In summary, the traffic generated during construction of the Gen-Tie Line would be very light. This is due to the dispersed nature of gen-tie line construction, the relatively small number of truck and worker commute trips that would be generated, the short duration of construction activity overall and at each work site, and the broad distribution of construction traffic. Traffic generated during inspection and maintenance of the completed Gen-Tie Line would be negligible. Therefore, the construction and operation of the Gen-Tie Line would not conflict with any Level of Service policies applicable to the affected roadways, and the impact would be *less than significant*.

Transit, Roadway, Bicycle and Pedestrian Facilities

Aquamarine Solar Project

Less-than-Significant Impact. The Regional Bike Routes plan in the *2035 Kings County General Plan Circulation Element* shows an existing bikeway on Avenal Cutoff Road that passes along the Aquamarine project frontage. The Aquamarine Solar Project would introduce new entrances along the Avenal Cutoff Road and Laurel Avenue frontages, which would increase potential interaction between bicyclists on the roadway and vehicles entering and exiting the project site. However, project egress will be controlled by stop signs, and sight-lines in all directions would be very good given the flat terrain and lack of visual obstructions. During project construction, the small increases in traffic congestion and hazard introduced by slow moving vehicles would be addressed through implementation of the traffic safety measures identified in Mitigation Measure TR-1a, which would also be expected to reduce potential traffic hazards to bicyclists. As such, the project would not pose a safety hazard to bicyclists or otherwise decrease the performance of the existing bikeway.

The nearest planned bikeways in the project vicinity are along Nevada Avenue between Avenal Cutoff Road and SR-41, and along Jackson Avenue between Avenal Cutoff Road and 18th Avenue. These planned bikeway segments are several miles from the project site and would not be directly affected by the project, and also would not be indirectly affected since little if any project-generated traffic would use those roadway segments. The project would not conflict with any adopted policies, plans, or programs regarding bicycle facilities, or otherwise decrease the performance or safety of bicycle facilities (Kings County 2010d).

There are no existing or planned public transit routes or pedestrian facilities in the project vicinity, so the project would not decrease the performance or safety of such facilities. The project would not conflict with any adopted policies, plans, or programs regarding transit or pedestrian facilities, or otherwise decrease the performance or safety of transit or bicycle facilities (Kings County 2010d).

In summary, the Aquamarine Solar Project would result in no potential conflicts with transit, bicycle, or pedestrian plans, policies, or programs, or otherwise decrease the performance or safety of such facilities. Therefore, the Aquamarine Solar Project would have a *less-than-significant impact* in this regard.

Gen-Tie Line

Less-than-Significant Impact. As mentioned above, there is an existing Kings County bike route along Nevada Avenue between SR-41 and Avenal Cutoff Road (Kings County 2010d). Since the Gen-Tie Line would run parallel to Nevada Avenue, small increases in localized traffic congestion and hazard may be introduced by slow moving vehicles during Gen-Tie construction. These potential safety hazards would be addressed through the implementation of the traffic safety measures identified in Mitigation Measure TR-1b, which would also be expected to reduce potential traffic hazards to bicyclists, transit vehicles, and pedestrians during construction. During operation, the Gen-Tie Line would have no impact on bicycle facilities. There are no existing or planned transit routes, or existing or planned pedestrian facilities, in the vicinity of the Gen-Tie Line.

In summary, the construction of the Gen-Tie Line would result in little or no potential conflicts with transit, bicycle, or pedestrian plans, policies, or programs, or otherwise decrease the performance or safety of such facilities. Therefore, the impact of the Gen-Tie Line in this regard would be *less than significant*.

b) Would the project conflict with or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?

This new section of the CEQA Guidelines was included in the comprehensive amendments to the State CEQA Guidelines which took effect on December 28, 2018 (OPR 2019). The referenced Guidelines Section 15064.3(b) sets forth revised criteria for analyzing transportation impacts of proposed projects, as required under AB 734. For land use projects, this section states that "vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact." The purpose in applying vehicle miles traveled (VMT) as the analytical metric is to further the State's long-term greenhouse gas reduction goals by reducing fuel consumption in the transportation sector, specifically through reductions in per capita VMT associated with new land use projects. The establishment of specific significance thresholds is left up to each lead agency to develop in the course of implementing corresponding amendments to its local CEQA guidelines. In the Technical Advisory issued by the Governor's Office of Planning and Research (OPR) for guidance in implementing AB 734, the recommended significance threshold for residential projects is defined as VMT exceeding a level of 15 percent below regional VMT per capita, and for office and retail projects a significant transportation impact would occur if project-generated VMT that exceeds a level of 15 percent below regional VMT per employee (OPR 2018, pp. 15-16). OPR's Technical Advisory does not address other land uses, and suggests that thresholds for other land uses be developed at the local level. As of this writing, Kings County has not established VMT significance thresholds for land use projects.

To address transportation impacts from small projects, the OPR Technical Advisory recommends the application of "screening thresholds" to identify when a project would be expected result in a less-than-significant transportation impact without conducting a detailed study. The Technical Advisory states that, in general, projects that generate fewer than 110 trips per day may be assumed to cause a less-than-significant transportation impact (OPR 2018, p.12).

The OPR Technical Advisory does not address the establishment of significance thresholds for construction VMT. However, Guidelines Section 15064.3(b)(3) states: "[f]or many projects, a qualitative analysis of construction traffic may be appropriate."

Based on the requirements of CEQA Guidelines Section 15064.3(b), as elaborated upon by OPR in the corresponding Technical Advisory, the following significance thresholds for VMT are established for purposes of this analysis:

> *Construction VMT* – Significance is to be determined through a qualitative analysis that considers estimated construction VMT as compared with Countywide VMT, and also considers pre-project traffic conditions on the roadways that would be most affected by construction traffic.

Operational VMT – Any project that generates operational traffic volumes of less than the screening threshold of 110 trips per day is presumed to have a less-than-significant transportation impact. Any project that generates 110 daily trips or more shall be quantitatively evaluated for VMT impacts.

Aquamarine Solar Project

Less-than-Significant Impact. The potential traffic impacts associated with construction and operation of the Aquamarine Solar Project are discussed in turn below.

Construction and Decommissioning

The Aquamarine Solar Project would be constructed over a period of two years during which time construction traffic volumes would fluctuate depending on the construction phase. Based on the air quality analysis of the Aquamarine project by Illingworth & Rodkin (see Appendix B), the average VMT generated by all worker trips and truck deliveries during project construction is estimated to be approximately 21,359 miles per day. In comparison, the average VMT for Kings County in 2018 was 3,514,636 miles per day (Caltrans 2015). Thus, the VMT generated during construction of the Aquamarine Solar Project would be equivalent to 0.61 percent (i.e., less than 1%) of average daily VMT in Kings County. This very small increment in VMT would occur only during the relatively brief construction period of two years. As discussed under item 'a' above, the roadways that would be most affected by project construction traffic (i.e., roadways subject to 40 daily construction trips or more) would all continue to operate at well within their design capacities with the addition of project construction traffic and would not be subject to any change in Level of Service due to project construction, even during the peak period of construction activity. The traffic volumes generated during decommissioning would be similar to, or somewhat lower than, traffic volumes during construction. Since baseline volumes will likely be higher at the time of decommissioning, the VMT generated during decommissioning would likely be a smaller percentage of Countywide VMT at that time than during construction. Given that the most affected roadways have ample surplus capacity, it is anticipated that the roadways would continue to operate without capacity or level of service impacts.

In summary, the above qualitative analysis shows that the VMT generated by Aquamarine project construction and decommissioning would be very low compared to overall Countywide VMT, and would only occur temporarily during these periods. The project construction and decommissioning traffic would have a minor short-term effect on local roadways, which would all have substantial remaining traffic carrying capacity during the two-year project construction period. The greenhouse gas emissions from project construction and decommissioning would be relatively small, and the Aquamarine Solar Project would result in a substantial net benefit in terms of greenhouse gas emissions since it would offset emissions from a fossil-fueled generating plant of equivalent capacity (see section *4.9 Greenhouse Gas Emissions*). Given the relatively low VMT generated during project construction and decommissioning, and considering that the Aquamarine Solar Project would help the State achieve its greenhouse gas reduction goals, and would thus advance the specific purpose of AB 734, the project would not conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b). Therefore, the project construction and decommissioning traffic impact under this significance criterion would be *less than significant*.

Operations

As discussed under item 'a' above, traffic generated during project operations would be very light. No permanent staff would be stationed at the Aquamarine solar facility, although operations and maintenance contractors would visit the project on a regular basis to perform inspections, maintenance and repairs. On average, it is estimated that about 10 daily round trips (i.e., 20 trip ends or trips) would be generated by the workers on any given day. This is substantially below the screening threshold of 110 trips per day recommended by OPR's Technical Advisory as the volume of daily trips that may be assumed to have a less-than-significant transportation impact. Therefore, the operation of the Aquamarine Solar Project would not conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b), and the impact under this significance criterion would be *less than significant*.

Gen-Tie Line

Less-than-Significant Impact. During the 8-month construction period for the Kings County portion of the Gen-Tie Line, the work activities would be distributed along the Gen-Tie corridor, with various crews engaged in surveying, ROW clearing, access driveway construction, staging area preparation, tower foundation installation, tower assembly and erection, conductor installation, guard structure installation and removal, and site restoration.

Based on the air quality analysis of the Aquamarine project by Illingworth & Rodkin (see Appendix B), the average VMT generated by construction of the Kings County Gen-Tie segment is estimated to be approximately 5,015 miles per day. In comparison, the average VMT for Kings County in 2015 was 3,514,636 miles per day (Caltrans 2015). The VMT generated during construction of the Aquamarine Solar Project would be equivalent to 0.14 percent (i.e., 1/700) of average daily VMT in Kings County. This very low VMT would occur over a brief 6-month construction period, and would mainly affect Nevada Avenue which is a very lightly traveled County road. Therefore, the construction of the Gen-Tie Line and would not conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b), and the impact under this significance criterion would be *less than significant*.

Once construction of the Gen-Tie Line is completed, the traffic generated during inspection and maintenance of the Gen-Tie Line would be negligible. Therefore, the operation of the Gen-Tie Line and would not conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b), and the impact under this significance criterion would be *less than significant*.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Aquamarine Solar Project

Less-than-Significant Impact with Mitigation Incorporated. The Aquamarine Solar Project would have driveway entrances on Avenal Cutoff Road and Laurel Avenue. These new entrances would result in turning movements in and out of the project site which would increase the potential for interaction with through traffic along these County roads. However, these project entrances would be designed in accordance with the *Kings County Improvement Standards,* and would be subject to

prior design review and approval by the Kings County Public Works Department. Project egress would be controlled by stop signs, and sight-lines would be very good in all directions given the flat terrain, absence of visual obstructions, and linear alignments of Avenal Cutoff Road and Laurel Avenue. Thus the potential traffic hazard resulting from the project would generally be small, particularly during project operations when the solar facility would generate very little traffic.

As discussed above, the volume of traffic generated by the project would be greatest during the construction and decommissioning phases. This would include regular deliveries of materials and equipment by large trucks. Slow moving trucks could result in temporary congestion near the project entrances, and could pose a safety concern due to abrupt changes in the speed of traffic flow, or due to slow turning movements across on-coming lanes of traffic. The implementation of the Mitigation Measure TR-1a below would reduce the potential impact from safety hazards due to construction and decommissioning traffic to a *less-than-significant* level.

> ***Mitigation Measure TR-1a: Traffic Safety Measures for Solar Project Construction.*** *As a condition of project approval, and prior to the issuance of encroachment permits, the applicant shall consult with the Kings County Public Works Department regarding construction activities that may affect area traffic (such as equipment and supply delivery necessitating lane closures, trenching, etc.). Additionally, the project plans will be reviewed by the appropriate County departments for conformance with all applicable fire safety code and ordinance requirements for emergency access. The contractor shall implement appropriate traffic controls in accordance with the California Vehicle Code and other state and local requirements to avoid or minimize impacts on traffic. Traffic measures that shall be implemented during construction and decommissioning activities include the following:*
>
> *a. Construction traffic shall not block emergency equipment routes.*
>
> *b. Construction activities shall be designed to minimize work in public rights-of-way and use of local streets. As examples, this might include the following:*
>
> *i. Identify designated off-street parking areas for construction-related vehicles throughout the construction and decommissioning periods.*
>
> *ii. Identify approved truck routes for the transport of all construction- and decommissioning-related equipment and materials.*
>
> *iii. Limit the employee arrivals and departures, and the delivery of equipment and materials, to non-peak traffic periods (e.g., avoid unnecessary travel from 7 to 9 AM and 4 to 6 PM).*
>
> *iv. Provide for farm worker vehicle access and safe pedestrian and vehicle access.*
>
> *v. Provide advance warning and appropriate signage whenever road closures or detours are necessary.*
>
> *c. Construction shall comply with San Joaquin Valley Air Pollution Control District standards for unpaved roads, which include a requirement to keep vehicle speeds below 15 miles per hour.*

Since the precise nature and timing of construction and decommissioning activities requiring the traffic safety measures set forth in Mitigation Measure TR-1a cannot be predicted as of this writing,

the details of the traffic safety mitigations will be determined by the County Public Works Department at the such time as the activities for which they are required are scheduled and the applicant's construction contractor requests consultation regarding such activities.

Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. Gen-Tie Line construction would involve the use of slow moving construction vehicles, many of which would have large turning radii. Safety hazards could arise from abrupt changes in traffic flow speeds caused by slow moving vehicles or from large trucks having to cross oncoming traffic lanes to make turns into construction areas such as monopole installation sites and pulling and tensioning sites.

In summary, the movement of construction vehicles, equipment and materials within and over public roadways during Gen-Tie construction could result in traffic disruption and safety hazards to the traveling public. Unless properly managed, safety hazards arising from construction truck traffic would represent a potentially significant impact. With implementation of Mitigation Measure TR-1b below, the impact would be reduced to *less than significant*.

Mitigation Measure TR-1b: Traffic Safety Measures for Gen-Tie Construction. *Prior to the start of construction activity on the Gen-Tie Line, the applicant shall prepare and implement a Traffic Management Plan (TMP). The TMP is to include, but not be limited to, the following provisions:*

a. A description of work hours, designated haul routes, and any timing restrictions on hauling during peak traffic periods.

b. A description of traffic control measures such as flagging, warning signs, barricades, cones, and detours, including locations and timing of the measures.

c. A description of the process for providing advance notification to property owners who would be affected by private road closures, temporary installation of guard structures, planned nighttime construction, and other construction activities. The notification would specify the timing and nature of the activity affecting each landowner, and would include contact information for designated construction personnel responsible for public coordination.

d. A description of emergency services providers in the affected areas, along with provisions for notification of such service providers on the timing, location, and duration of construction activities, especially road closures and detours.

The Traffic Management Plan would be subject to review and approval of Kings County Public Works Department. This review would occur during the course of County encroachment permit application process. The California Highway Patrol and County Sheriff's Department would also review the TMP prior to construction

d) Would the project result in inadequate emergency access?

The Health and Safety Element of the 2035 Kings County General Plan designates evacuation routes to be relied upon for emergency or disaster responses. Within the project area, the primary evacuation routes include SR-41 and SR-198, and the secondary evacuation routes include Avenal Cutoff Road, Laurel Avenue and Kansas Avenue (Kings County 2010e).

Aquamarine Solar Project

Less-than-Significant Impact with Mitigation Incorporated. The Aquamarine Solar Project will have entrances on Avenal Cutoff Road and Laurel Avenue, both of which are County-designated emergency evacuation routes. These routes would remain operational through construction, and emergency access would not be limited by construction activities at the project site. As required under Mitigation Measure TR-1a, the applicant would be required to coordinate with the County Public Works Department regarding construction-related activities that may affect traffic on these roadways, and specifically to prevent blockage of emergency equipment routes.

The project entrances will connect to the internal system of driveways and aisleways to provide adequate emergency access throughout the project. The project plans will be reviewed by the appropriate County departments for conformance with all applicable fire-safety code and ordinance requirements for emergency access. Therefore, with the implementation of Mitigation Measure TR-1a, the project would result in *a less-than-significant impact* with respect to adequacy of emergency access.

Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. The construction of the Gen-Tie Line would involve the use of large and slow moving trucks and equipment that could result in traffic safety hazards. These trucks could also result in localized congestion which could affect the movement of emergency vehicles. Any potential for delays to emergency vehicles would be addressed through the implementation of the traffic safety plans as specified in Mitigation Measure TR-1b above. With mitigation, the potential for the construction of the Gen-Tie Line to result in inadequate emergency access or passage by emergency vehicles through the area would be minimized, and the impact would be *less than significant*.

The Gen-Tie Line would be well-served by a regional roadway network that includes several state highways including SR-198, SR-269, and SR-41, along with several major county roads in Kings and Fresno counties. Since the Gen-Tie Line would run alongside Nevada Avenue, emergency access would be readily obtained directly from the public roadway.

In summary, the potential impact of the Gen-Tie construction upon emergency access would be reduced to *less than significant* with the implementation of Mitigation Measure TR-1b. Also, since the emergency access to the Gen-Tie Line itself would be available directly from Nevada Avenue which would provide for adequate emergency response to the operating Gen-Tie Line. Therefore, the Gen-Tie Line would not result in inadequate emergency response, and the impact would be *less than significant*.

REFERENCES – TRANSPORTATION

Caltrans 2002 — California Department of Transportation (Caltrans. 2002. *Guide for the Preparation of Traffic Impacts Studies*. http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf

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4.18 TRIBAL CULTURAL RESOURCES

Would the project:	**Potentially Significant Impact**	**Potentially Significant Unless Mitigation Incorporated**	**Less Than Significant**	**No Impact**
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:				
i) 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 § 5020.1(k), or	☐	■	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native Tribe.	☐	■	☐	☐

Introduction

Assembly Bill 52 (AB 52) provides protections for tribal cultural resources. As of July 1, 2015, all lead agencies approving projects under CEQA are required, if formally requested by a culturally affiliated California Native American Tribe, to consult with such tribe regarding the impacts of a project on tribal cultural resources prior to the release of any negative declaration, mitigated negative declaration (MND) or a notice of preparation (NOP) for an environmental impact report (EIR). Under PRC Section 21074, tribal cultural resources include site features, places, cultural landscapes, sacred places or objects that are of cultural value to a tribe that are eligible or listed on the CRHR or a local historic register or that the lead agency has determined to be a significant tribal cultural resource.

Tribal consultation is to continue until mitigation measures are agreed to, unless the tribe or the lead agency concludes in good faith that an agreement cannot be reached. In the case of agreement, the lead agency is required to include the mitigation measures in the environmental document along with the related Mitigation Monitoring and Reporting Program (MMRP) (see PRC Section 21084.3). If no agreement is reached, the lead agency must still impose all feasible measures necessary for a project to avoid or minimize significant adverse impacts on tribal cultural resources (PRC Section 21084.3).

Setting

A complete discussion of the cultural resources setting is provided in section *4.5 Cultural Resources. A*s discussed in section 4.5, archival research and reconnaissance of the Aquamarine project site and Gen-Tie corridor by Basin Research Associates indicated that no significant archaeological resources are present within the project area. The majority of the lands in the study area have been disturbed by agricultural activities, which may have disturbed or archaeological resources at or near the ground surface. However, it is possible that intact archaeological resources may be buried below the disturbed upper layer of soil. If so, the excavation associated with Aquamarine and Gen-Tie projects could expose as-yet undetected resources. It is also possible that human remains could be encountered as human remains have been associated with several of the prehistoric archaeological resources along the former Tulare Lake shoreline.

Environmental Evaluation

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or I a local register of historical resources as defined in Public Resources Code § 5020.1(k), or

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. To date, no National Register of Historic Places or California Register of Historical Resources eligible or listed historic properties/cultural resources, and no known ethnographic, traditional or contemporary Native American use areas and/or other features of cultural significance have been identified in or adjacent to the Aquamarine project site or Gen-Tie corridor.

The Native American Tribe that is culturally affiliated with the project area is the Santa Rosa Rancheria Tachi Yokut Tribe. On January 31, 2019, representatives of the Kings County Community Development Agency held a coordination meeting with representatives of the Cultural and Historical Preservation Department of the Santa Rosa Rancheria Tachi Yokut Tribe pursuant to AB 52. During the consultation meeting the tribal representatives stated that there are no known tribal cultural resources within the Aquamarine project site or Gen-Tie corridor, although there is a potential for discovery of previously unknown tribal cultural resources during site disturbance and construction of Aquamarine Solar Project and Gen-Tie Line. The tribal representatives provided the County staff with recommended mitigation measures for protection of tribal cultural resources, which have been incorporated in full in Mitigation Measures CUL-1 and CUL-2 in section *3.5 Cultural Resources*. With the implementation of Mitigation Measures CUL-1 and CUL-2, the impact to tribal cultural resources would be reduced to *less than significant.*

Mitigation Measure: Implement MM CUL-1 and CUL-2.

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native Tribe.

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. In the event that tribal cultural resources are discovered during project site disturbance that have not previously been evaluated for significance, the Kings County Community Development Agency will evaluate the significance of the resource in cooperation with the Santa Rosa Rancheria Cultural and Historical Preservation Department, through application of the criteria for eligibility for listing on the California Register of Historical Resources, as required under AB 52. With implementation of Mitigation Measures CUL-1 and CUL-2, impacts to such potential tribal cultural resources would be reduced to *less than significant.*

Mitigation Measure: Implement MM CUL-1 and CUL-2.

REFERENCES – TRIBAL CULTURAL RESOURCES

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[Cultural Resources report is kept administratively confidential by Kings County Community Development Agency per Government Code Section 6254, subdivision (r) and Section 6452.10.]

4.19 UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment facilities or stormwater drainage, electric power, natural gas, or telecommunications, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	■
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	■	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	■
d) Generate solid waste in excess of state or local standards, in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste goals?	☐	☐	■	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	■

Setting

Aquamarine Solar Project and Gen-Tie Line

A comprehensive description of the utilities and service systems setting of the Aquamarine Solar Project and Gen-Tie Line is provided in the Draft PEIR on the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan, which is incorporated into this document by reference pursuant to Section 15150 of the State CEQA Guidelines. The description of the overall utilities and service systems setting is found on pages 3.14-1 through 3.14-8 of the PEIR (WWD 2017b). A description of the specific conditions relevant to the Aquamarine Solar Project and Gen-Tie Line is provided below.

Water Supply

Agricultural water supply for crop irrigation in the project area is mainly provided from imported surface water deliveries provided by the Westlands Water District (WWD). Surface water supplies are typically augmented by groundwater pumping from agricultural wells located throughout the area. The average irrigation rate for agricultural lands within Westlands Water District is approximately 2.5 acre-feet per acre per year (WWD 2018). In the 872-acre northwest portion of the Aquamarine site (i.e., all project lands west of the 25th Avenue alignment), irrigation water for row crops is provided from surface water

supplies, to the extent that they are available from year to year, and supplemented with well water as needed. There are two operating agricultural wells on the Aquamarine project site, including one located just inside the western boundary of the site, and the other located at the eastern site boundary just south of Laurel Avenue. There are no sources of potable domestic water at the project site. The 953 acres in the eastern portion of the Aquamarine site (i.e., all project lands east of the 25th Avenue alignment) are under the ownership of Westlands Water District. These lands have been retired from irrigated agriculture and as such do not receive imported surface water for irrigation.

Wastewater Collection and Treatment

The project site is not within or near an area served by a community wastewater collection and treatment system. For projects in rural areas of Kings County that include permanent on-site employees, the wastewater disposal needs are typically met by individual septic tank and leachfield systems which are designed, constructed, and operated in accordance with the requirements and standards of Kings County and the Regional Water Quality Control Board.

Storm Water Drainage

There are no storm drainage facilities in the project area. The existing network of irrigation canals and ditches in the project area receive some stormwater runoff from adjacent lands during intense or prolonged storm events. Under current conditions, rainfall at the Aquamarine project site percolates into the soil with little or no runoff leaving the site. The terrain of the project site is virtually flat, with a maximum gradient of 0.3 percent. During normal rain events, runoff from impervious surfaces would be absorbed by the soil and percolate into the groundwater basin. During more intense or prolonged storm events, the ground becomes saturated and relatively minor volumes of stormwater temporarily pond on the surface and gradually percolate into the ground, and some areas drain to adjacent canals and drainage ditches.

Electric Power

Pacific Gas and Electric Company (PG&E) is an investor-owned utility company that provides electrical service to the project site and most of Kings County, with the exception of a small area in the northeast corner of the County which is served by Southern California Edison (SCE). There are several electric lines that pass through the Aquamarine project site. These include the 70-kV Henrietta-Tulare Lake subtransmission line that runs through the site along the unimproved 25th Avenue alignment, and two 12-kv distribution lines, with one on the same pole line as the 70-kv line, and the other running along the south side of Laurel Avenue.

Natural Gas

The project area is within the service area of Southern California Gas Company (SoCalGas), although there are no natural gas distribution lines in the project area. A high pressure natural gas transmission line crosses the northwest portion of Aquamarine project site in a southwest to northeast direction. A spur transmission line branches off this main line and runs along the south side of Laurel Avenue to the community of Stratford.

Telecommunications

The project area is located within AT&T's service territory for land based telephone service, and also includes internet and TV connections. Comcast Xfinity provides cable, internet and phone service in the project area. Wireless internet is available to the project area from Unwired Broadband.

Solid Waste

Solid waste collection and disposal service in Kings County is provided by the Kings Waste and Recycling Authority (KWRA). The KWRA was formed in 1998 by agreement between Kings County and the cities of Lemoore, Hanford, and Corcoran. Solid waste from the member jurisdictions is transported to KWRA Materials Recovery Facility in Hanford where wastes are separated for recycling, composting, or landfill disposal. Commercial solid waste is collected by private contract with licensed haulers (Kings County 2010a). Used construction and demolition material is accepted at several approved facilities in the region.

Non-recyclable materials are transferred to the B-17 Landfill Unit at the Chemical Waste Management, Inc. (CWMI) Kettleman Hills Facility located on SR-41 in Kettleman Hills approximately 13 miles south of the project area. The B-17 Landfill Unit has a maximum disposal rate of 2,000 tons per day, and currently receives an average of 1,350 tons per day. The total permitted capacity of B-17 Landfill Unit is 18.4 million cubic yards, with a remaining capacity of approximately 15.5 million cubic yards, as of January 2017. The facility's estimated closure year is 2059, with the actual closure date depending on the rate of fill (CalRecycle 2017).

Environmental Evaluation

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment facilities or stormwater drainage, electric power, natural gas, or telecommunications, the construction or relocation of which could cause significant environmental effects?

Aquamarine Solar Project and Gen-Tie Line

Water Supply

During the construction and decommissioning phases, the Aquamarine Solar Project would use untreated groundwater obtained from an existing on-site agricultural well. During project operations, imported (untreated) surface water would be obtained from Westlands Water District for maintenance activities and panel cleaning. During construction, project operations, and decommissioning, drinking water would be provided by bottled water delivered by truck. Shortages of untreated well water or surface water supplies to meet project demands during construction, operations, or decommissioning are not currently foreseen. However, in the unlikely event that such unforeseen shortages may occur in the future, possibly in the event of a prolonged severe drought, the relatively small volumes of untreated water that would be temporarily required during the construction, operations, and decommissioning phases would be purchased from alternative sources and trucked to the site. Therefore, no new or expanded water treatment facilities are

planned or required for the project which could cause significant environmental effects. (See item 'd' below for a detailed discussion of water supply.)

During construction, the Gen-Tie project would require water for dust suppression at work sites and staging areas, and on access roads. The water would be obtained from agricultural wells or municipal water sources in the vicinity and transported in water trucks to the work sites and access roads. Drinking water for work crews would be provided by bottled water. Little or no water would be required during operation of the Gen-Tie facilities. Existing water supply sources would be adequate to provide the relatively small amount of water required for construction of the Gen-Tie Line, and no expansion of water facilities or additional water entitlements would be required. Therefore, no new or expanded water treatment facilities are planned or required for the Gen-Tie Line which could cause significant environmental effects.

Wastewater Treatment

The Aquamarine Solar Project will include an O&M building with sanitary facilities for workers who will regularly be on-site for routine inspection, maintenance, and repair tasks. These sanitary facilities will be connected to an adjacent septic tank and leach field system that will be designed and constructed as prescribed by a qualified registered professional engineer in accordance with applicable standards and requirements. The installation of the septic tank and leachfield system would not result in significant environmental effects.

During construction of the Gen-Tie Line, the sanitary needs of construction workers would be provided by portable chemical toilets that would be serviced by a private contractor. Operation of the Gen-Tie Line would involve periodic inspection and maintenance activities by workers visiting the sites, for which there would be no need for permanent wastewater facilities. As such, there would be no permanent wastewater facilities associated with the Gen-Tie Line.

Stormwater Drainage

No new stormwater drainage facilities are planned to be constructed for the Aquamarine Solar Project. Under current conditions, rainfall percolates into the soil with little or no runoff leaving the site. The terrain of the project site is virtually flat, with a maximum gradient of 0.3 percent, and the project will result in no substantial modification of existing site grades. The project will introduce very few structural elements with impervious surfaces that would impede direct percolation of rainwater into the soil. The equipment pads and small parking area would result in less than 1 percent impervious surface coverage of the site, with over 90 percent of the site retained in vegetated cover and 9 percent devoted to permeable gravel driveways. During normal rain events, runoff from impervious surfaces would be absorbed by the adjacent vegetated ground and percolate into the soil. During more intense or prolonged storm events, the ground would become saturated and relatively minor volumes of stormwater may temporarily pond on the surface and gradually percolate into the ground, as occurs under existing conditions. Due to the virtually level ground conditions, and the very minor introduction of impervious surfaces to the site by the project, the potential for stormwater to be mobilized and concentrated in sustained runoff flows is unlikely to occur. Therefore, the Aquamarine Solar Project would not require the construction of new stormwater drainage facilities. The Gen-Tie Line would not require the construction of new stormwater drainage facilities.

Electric Power

The Aquamarine Solar Project is itself a power generating facility; however, electric service from the existing PG&E system would be required for certain project phases. During construction, the project would receive service power from the existing electrical distribution lines that run through site, and would also have backup generators available on site. During project operations, the solar facility would have service power available from PG&E when the project is not powered by on-site generation. During decommissioning, the service connections to PG&E's system would remain in place until they are no longer needed. The installation and removal of electrical service connections to the Aquamarine project site would not result in significant environmental effects. The Gen-Tie Line would not require electric service during construction or operation.

Natural Gas

The Aquamarine Solar Project would not require the use of natural gas for power generation or other purposes. Likewise, the Gen-Tie Line would not require natural gas service.

Telecommunications

Telecommunications to the Aquamarine solar facility would be provided either by a local provider or via a microwave/satellite communications lattice tower at the O&M facility. The installation of telecommunications facilities at the project site would not result in significant environmental effects. The Gen-Tie Line would not require telecommunications service.

Conclusion

Less-than-Significant Impact. The Aquamarine Solar Project and Gen-Tie Line would not require or result in the relocation or construction of new or expanded water, wastewater treatment facilities or stormwater drainage, electric power, natural gas, or telecommunications, the construction or relocation of which could cause significant environmental effects; therefore, the impact would be *less-than-significant*.

b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Aquamarine Solar Project

Less-than-Significant Impact. The following evaluation of water supply for the Aquamarine Solar Project includes separate discussions of construction water and operational water.

Project Construction

As discussed in section *2.2 Project Description*, it is estimated that construction of the Aquamarine Solar Project will require a total of 365 acre-feet of water, mainly for dust suppression and soil conditioning over the 2-year construction period. The average annual water demand for project construction would be 182.5 acre-feet per year (afy). It is anticipated that water for construction will be obtained from the existing on-site agricultural well near the western boundary of the project site.

Current groundwater pumping in the area varies substantially from year to year depending on availability of surface water deliveries of Central Valley Project (CVP) water delivered by the Westlands Water District (WWD). During years when WWD receives most of its CVP water allocation, groundwater provides a minor portion of irrigation requirements. During years of severe drought, like 2013 and 2014, groundwater pumping increases substantially to make up for shortfalls of surface water deliveries. The WWD has determined that the "safe yield" of the groundwater resource, or the average volume of groundwater that can be pumped annually within the WWD service area without lowering groundwater levels over the long term, ranges from 135,000 to 200,000 afy. The Water Supply Assessment (WSA), prepared in conjunction with this MND, conservatively assumed safe yield to be at the lower end of the range, or 135,000 afy. This is equivalent to approximately 0.24 afy per acre over the 568,000 irrigable acres within WWD's service area (the WSA is contained in Appendix E of this document).

Over its 2-year construction period, the Aquamarine Solar Project would have an annual groundwater demand would be 182.5 afy, or 0.1 acre-feet per acre per year. This volume of groundwater pumping is considerably less than the 0.24 acre-feet per acre "safe yield" or the average annual pumping volume that can occur without lowering groundwater levels in the area. Therefore, groundwater supplies available at the site would be sufficient to meet the needs of construction. As such, the impact of project construction upon available water supplies would be *less than significant*.

As noted in section *2.2 Project Description*, curtailment of groundwater pumping to meet the project demand for construction water is not currently foreseen. However, in the unlikely event that such unforeseen curtailment occurs, the relatively small volumes of untreated water that would be temporarily required during construction would be purchased from alternative sources and trucked to the site.

Project Operation

During project operation, non-potable water will be required for activities such as panel cleaning, watering sheep, washing and rinsing equipment, and other operational uses. As described in section *2.2 Project Description*, the combined water requirement for all operational activities is estimated to total 32.01 acre-feet annually over the 1,825-acre project site.

Operational supplies will not be obtained from groundwater wells but will be provided by Westlands Water District (WWD) through its existing system of lateral pipelines for conveyance of imported surface water. Under the WWD's Municipal and Industrial (M&I) Regulations, an applicant may apply for and receive up to 5 acre-feet of water for M&I use. The District has estimated that solar development requires 3-5 acre-feet per year per 160 acres. In order to provide for solar projects greater than 160-acres in size, the WWD has established an exception to M&I limit whereby solar development would be eligible to receive up to 5 acre-feet per year for each 160 acres developed. The estimated 32.01 acre-feet per year of operational water demand for the project is equivalent to 2.81 acre-feet per quarter section (160 acres). This is well within the 5.0 acre-feet of imported surface water per quarter section that the Aquamarine Solar Project is eligible to receive through WWD. Therefore, surface water entitlements will be sufficient to meet the project's operational needs. As determined in the Water Supply Assessment contained in Appendix E, the available water supply is sufficient to meet project needs during normal, dry, and multiple dry years. As such, the impact of project operations upon available water supplies would be *less than significant*.

In the event that the project is periodically unable to obtain surface water supplies, such as during a severe prolonged drought, the project would be expected to obtain operational water from groundwater sources. The 32.01 acre-feet per year of operational water demand would be equivalent to 0.018 acre-feet per acre per year, which is far less than the safe yield of the groundwater basin of 0.24 to 0.35 acre-feet per acre per year. Therefore, the groundwater available to temporarily augment surface water supplies would be sufficient to meet the operational needs of the project. In the unlikely event that such backup groundwater supplies to the project would also be curtailed, the relatively small volumes of untreated water required for project operations would be purchased from alternative sources and trucked to the site. As such, the impact of project operations upon groundwater resources would be *less than significant.*

Project Decommissioning

Untreated water would be required during decommissioning, although the volume of water required is expected to be less than required during the construction phase. Since vegetative cover would be maintained on the site during deconstruction, there would be relatively little exposed soil that would require watering for dust suppression. Similarly, water would not be required for soil conditioning during grading. The source of water during decommissioning is expected to be from the existing on-site well near the western boundary of the project site. The total groundwater pumped during decommissioning is expected to be substantially less than the estimated 365 acre-feet required during project construction. Even assuming that water demand during decommissioning would be same as during construction, this would represent an average volume of about 0.2 acre-feet per acre over the 1,825-acre project site. Assuming decommissioning would require one year or less to complete, this would result in a water consumption rate of 0.2 acre-feet per acre per year. Since this would be less than the safe yield of the groundwater basin of approximately 0.24 to 0.35 acre-feet per acre per year, the project water demands during decommissioning would not result in overpumping or exceedance of the safe yield of the groundwater basin.

As discussed for project construction above, curtailment of groundwater pumping to meet the project demand for water during the decommissioning phase is not currently foreseen. However, in the unlikely event that such unforeseen curtailment occurs, the relatively small volumes of untreated water that would be temporarily required during the decommissioning phase would be purchased from alternative sources and trucked to the site.

In summary, the groundwater and surface water supplies available for project construction, operation, and decommissioning are sufficient to meet the needs of the project without new or expanded entitlements to water. Therefore, the impact of the Aquamarine Solar Project upon available water supplies would be *less than significant*.

Reasonably Foreseeable Future Development

The water supply impacts associated with reasonably foreseeable development are addressed in section *4.21 Mandatory Findings of Significance*, item 'b' (cumulative impacts). As discussed, there are a number of reasonably foreseeable cumulative solar projects in Kings County. With respect to water supply, each cumulative solar project would require water during construction and operation. The demand for water at each site would be highest during construction for purposes of dust control and soil conditioning. For most cumulative projects, construction water would be supplied by existing agricultural wells. It is estimated that construction water demand for each project would

be about 0.2 acre-feet per acre per year. In the groundwater basin beneath the project site, the safe yield has been determined to be about 0.24 to 0.35 acre-feet per acre per year. Therefore, even if the other cumulative projects in the vicinity were constructed concurrently with the Aquamarine project, the groundwater pumping rate would be within safe yield in each case, such that the cumulative impact of groundwater pumping during construction would be also less than significant.

The operational water supplies for each project would be mainly used for panel washing. As discussed in in section *4.10 Hydrology and Water Quality*, operational water demands for the proposed project are estimated to be approximately 0.02 acre-feet per acre per year, or about 10 percent of the construction water usage rate. Unlike the other cumulative projects, it is expected that the Aquamarine Solar Project's operational demands would be met from imported surface water delivered through Westlands Water District, although there is a possibility that well water may be utilized as backup supply during times of drought when there may be shortages of imported water. Assuming that the cumulative projects in the project's groundwater basin, including the Aquamarine project, all rely solely on well water for operational needs, the cumulative operational water demands of about 0.02 acre-feet per acre per year would be substantially below the safe yield of the aquifer of 0.24 to 0.35 acre-feet per acre per year. Thus, groundwater supplies would be available to serve reasonably foreseeable future development during normal, dry, and multiple dry years, without adversely affecting the sustainability of the groundwater basin. Therefore, the impact to water supplies from the operation of the Aquamarine Solar Project and other reasonably foreseeable future development would be *less than significant*.

Gen-Tie Line

Less-than-Significant Impact. During construction, the Gen-Tie Line would require water for dust suppression at work sites and staging areas, and on access roads. The water would be obtained from agricultural wells or municipal water sources in the vicinity and transported in water trucks to the work sites and access roads. Drinking water for work crews would be provided by bottled water. Little or no water would be required during operation of the Gen-Tie Line. Existing water supply sources would be adequate to provide the relatively small amount of water required for construction of the Gen-Tie project. As discussed above, groundwater supplies would be available to serve reasonably foreseeable future development during normal, dry, and multiple dry years, without adversely affecting the sustainability of the groundwater basin. Therefore, the impact to water supplies from the construction and operation of the Gen-Tie Line and other reasonably foreseeable future development would be *less than significant*.

c) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Aquamarine Solar Project and Gen-Tie Line

No Impact. As discussed above, the wastewater from the Aquamarine Solar Project would be conveyed to an on-site septic tank and leachfield system for on-site treatment and disposal. Since the Aquamarine site is located in an area with a perched water table, it is designated by Kings County as an area requiring engineered septic systems. As such, the septic and leachfield system at

the Aquamarine project will be designed and constructed as specified by a qualified registered professional engineer, and subject to approval of the Kings County Building Official, which would ensure effective functioning of the septic and leachfield system and avoid impacts to groundwater quality. The Gen-Tie Line would include no permanent wastewater facilities. Therefore, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* on the treatment capacity of a wastewater treatment provider.

d) Would the project generate solid waste in excess of state or local standards, in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste goals?

Aquamarine Solar Project

Less-than-Significant Impact. The development of Aquamarine Solar Project would temporarily generate construction waste during the development phase, and would generate solid waste during operation of the PV solar facility, and also during the decommissioning phase. The solid waste impacts during the construction, operational, and decommissioning phases of the project are discussed in turn below. [Note: The following discussion addresses non-hazardous waste only. Hazardous waste disposal is addressed in section *4.9 Hazards and Hazardous Materials*.]

Construction Phase

During construction of the solar facility, the waste generated would primarily consist of non-hazardous waste materials such as packing containers and materials, waste lumber, wood pallets, scrap metal, glass and paper. (Since site clearing would involve mulching or plowing under of crop remnants, it is anticipated that minimal greenwaste would be generated.) Based on construction waste generation rates at a similar solar PV project in northern Los Angeles County, the construction of the Aquamarine Solar Project is estimated to generate approximately 26.5 cubic yards (cy) of construction waste per MW of installed generating capacity (LA County 2010, p. 4-51). [1 cubic yard (cy) of construction waste is equivalent to approximately 1 ton of construction waste (CalRecycle 2019a).] Thus construction of the 250 MW solar facility would generate approximately 6,625 tons (or cy), or 9.08 tons per day on average (over the 2-year construction period). Much of the construction waste materials would be reusable (e.g., wood pallets and packing crates), or recyclable (e.g., scrap metal, paper, glass), and doing so has been shown to be cost effective (CalRecycle 2019b). It is assumed that 65 percent of the construction waste would be recycled as required under the CalGreen Code (CBSC 2016). Thus approximately 2,319 tons (4.46 tons per day) of construction waste from the Aquamarine Solar Project would be disposed of at a Class III landfill. Assuming that all of the non-recycled waste would be hauled to the B-17 Landfill Unit at the Chemical Waste Management, Inc. (CWMI) Kettleman Hills Facility located in the Kettleman Hills, the 4.46 tons of daily construction waste generated by the project would represent about 0.3 percent of the current the daily average solid waste disposal (1,350 tons per day) at the B-17 Landfill Unit. With the addition of project construction waste, the total daily solid waste disposed at B-17 Landfill Unit would remain well below the 2,000 ton per day permitted limit. Additionally, the total 2,319 tons (or 2,319 cy) of non-recycled construction waste generated during the construction period would represent 0.015 percent of the remaining 15.5 million cy capacity of B-17 Landfill Unit. Both the daily disposal rate and the total construction waste generated by the project would represent small increases in solid waste accepted at the B-17 Landfill Unit.

Operational Phase

During operation of the Aquamarine Solar Project, the non-hazardous waste generated would include typical refuse generated by workers such as scrap metal and machine parts, broken or defective electrical components, oily rags, packing material from deliveries, paper, cardboard, plastic, empty containers, and miscellaneous solid waste. The solar facility operator would contract with a commercial waste collection service which would haul the waste to the Kings Waste and Recycling Authority Material Recovery Facility in Hanford for sorting and recycling and/or transport of the non-recyclable waste to a local landfill site.

Based on operational solid waste generation rates at a similar solar PV project in northern Los Angeles County, the Aquamarine Solar Project is estimated to generate approximately 0.9 cubic yards (cy) of solid waste per year per MW of installed generating capacity (LA County 2010, p. 4-53). [Approximately 4 cubic yards (cy) of uncompacted solid waste from commercial/industrial sources is equivalent to approximately 1 ton of municipal solid waste (USEPA 1997).] Upon full operation, the Aquamarine Solar Project would generate a total of approximately 225 cubic yards, or approximately 56.25 tons of non-hazardous solid waste per year. Assuming that at least 50 percent of the solid waste would diverted through recycling, the remaining 28.13 tons (112.5 cy) of uncompacted solid waste from the project would be disposed of at a Class III landfill per year. At the landfill, in-place compaction would reduce the volume by 66 percent, resulting in 38.25 cy per year of used landfill capacity (CalRecycle 2014). Assuming that all of the non-recycled waste would be hauled to the B-17 Landfill Unit at the CWMI Kettleman Hills Facility, the 28.13 tons of solid waste landfilled by the project annually would represent a small fraction of the solid waste disposed at the B-17 Landfill Unit, which currently receives an average of 1,350 tons per day, and which would remain well below the 2,000 ton per day permitted limit. Both the daily disposal rate and the total non-hazardous solid waste generated by the Aquamarine Solar Project would represent small increases in solid waste accepted at the B-17 Landfill Unit.

As discussed under 'Setting,' the B-17 Landfill Unit has a remaining capacity of approximately 15.5 million cubic yards, and is not anticipated to reach capacity until 2059. The total solid waste generated by operation of Aquamarine Solar Project over the 25-year life of the project that would be landfilled would be approximately 956 cy (assuming compaction and 50 percent diversion), or 703 tons. When combined with the 2,319 cy (or 2,319 tons) of construction waste generated during that period (assuming 65 percent diversion), the total landfilled solid waste from construction and operation of Aquamarine Solar Project would be about 3,275 cy (compacted), or 3,022 tons. This represents 0.02 percent of the total remaining capacity of the CWML, or approximately 1.51 days of permitted disposal at the B-17 Landfill Unit, and would not appreciably shorten its operating life.

Decommissioning Phase

Upon deconstruction of the Aquamarine Solar Project, it is expected that much of the equipment and fixtures, such as solar modules and racking, would be returned to the manufacturer for reuse or otherwise reused on the secondary market. Waste materials that are not salvaged for reuse would be shipped to the Kings Waste and Recycling Authority's Materials Recovery Facility in Hanford, where recyclable materials would be removed. All remaining waste would then go to the B-17 Landfill Unit at the Chemical Waste Management Kettleman Hills Facility. The B-17 Landfill Unit has an approved capacity of 18.4 million cubic yards. As of January 2017, the B-17 Landfill Unit had a capacity remaining of approximately 15.5 million cubic yards, and its estimated closure date is 2059,

or about 40 years hence. Since the estimated life of the Aquamarine solar facility is 25 to 30 years, the landfill will have sufficient capacity to accept project-generated solid waste throughout the life of the project. Should this facility become unavailable prior to the time of project decommissioning, another equivalent facility will be utilized. All waste associated with decommissioning will be disposed of or recycled in accordance with applicable laws.

In summary, the Aquamarine Solar Project would not result in exceedance of the local landfill's permitted daily disposal limit, and the facility has sufficient capacity to accept solid waste generated during all phases of the Aquamarine Solar Project, including throughout the operational life of the project. As discussed under item 'e' below, the Aquamarine project would comply with all solid waste reduction requirements and would not impair their attainment. Therefore, the Aquamarine project's impact in terms of solid waste would be *less than significant*.

Gen-Tie Line

Less-than-Significant Impact. The construction of the Gen-Tie Line would generate small amounts of solid waste, which would mainly consist of scrap materials and debris. Waste materials would be salvaged for reuse or recycled to the extent practicable. Other non-hazardous construction materials would be disposed of at municipal landfills, such as the CWML facility in Kings County. During operation of the completed Gen-Tie Line, little or no solid waste would be generated. The small amounts of solid waste generated by construction of the Gen-Tie Line, and the negligible amount of solid waste generated by its operation, would have minimal effects on the remaining capacities of the landfills in the vicinity. As discussed under item 'e' below, the Gen-Tie Line would comply with all solid waste reduction requirements and would not impair their attainment. Therefore, the impacts of the Gen-Tie Line upon landfill facilities would be *less-than-significant*.

e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Aquamarine Solar Project and Gen-Tie Line

No Impact. It is expected that all solid waste generated by the Aquamarine Solar Project and Gen-Tie Line would be disposed, recycled, reused, or otherwise reduced in accordance with all applicable local, state and federal regulations. Neither the Aquamarine Solar Project nor the Gen-Tie Line would require the development of new landfills, nor would they require existing landfills to be expanded. Therefore, the Aquamarine Solar Project and Gen-Tie Line would have *no impact* in terms of compliance with management and reduction statutes and regulations related to solid waste.

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4.20 WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	■
c) 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?	☐	☐	☐	■
d) 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?	☐	☐	☐	■

Environmental Evaluation

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones would the project:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. Neither the Aquamarine Solar Project nor the Gen-Tie Line are in or near a state responsibility area or on lands classified as very high fire hazard severity zones. The map of Fire Hazard Severity Zones (FHSZ) in State Responsibility Area (SRA) for Kings County prepared by the California Department of Forestry and Fire Protection (CalFire) shows the project area as being within a Local Responsibility Area (LRA)(CalFire 2007a). The nearest areas mapped as being within the SRA are located southwest of State Route 33, approximately 18 miles southwest of the Aquamarine project site, and 12 miles from the west end of the Kings County segment of the Gen-Tie Line. The nearest area within the SRA that is zoned as Very High Severity on the FHSZ map are located in the Diablo Range at the western edge of Kings County, at least 20 miles from the Aquamarine project site and Gen-Tie corridor. Calfire's map of Fire Hazard Severity Zones in Local Responsibility Area (LRA) for Kings County shows the project area as being "unzoned" for fire hazard. There are no areas within the Kings County LRA that are zoned as Very High Severity (CalFire 2007b). The Health and Safety Element of the Kings County General Plan includes a map of Potential Fire Hazards which shows project area as being subject to "little or no threat" (Kings County 2010e). Therefore, Aquamarine Solar Project and Gen-Tie Line would have *no impact* in terms of the risk of wildland fire in a State Responsibility Area

mapped as Very High Severity, and would not impair an adopted emergency response plan or emergency evacuation plan.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. Since neither the Aquamarine Solar Project nor the Gen-Tie Line are in or near a State Responsibility Area or on or near lands classified as Very High Fire Hazard severity zones, this significance criterion does not apply and there would be *no impact*.

c) 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?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. Since neither the Aquamarine Solar Project nor the Gen-Tie Line are in or near a State Responsibility Area or on or near lands classified as Very High Fire Hazard severity zones, this significance criterion does not apply and there would be *no impact*.

d) 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?

Aquamarine Solar Facility and Gen-Tie Line

No Impact. Since neither the Aquamarine Solar Project nor the Gen-Tie Line are in or near a State Responsibility Area or on or near lands classified as Very High Fire Hazard severity zones, this significance criterion does not apply and there would be *no impact*.

REFERENCES – WILDFIRE

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4.21 MANDATORY FINDINGS OF SIGNIFICANCE

		Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant	No Impact
a)	***Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?***	☐	■	☐	☐
b)	***Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)***	☐	■	☐	☐
c)	***Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?***	☐	■	☐	☐

Environmental Evaluation

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. As discussed in section *4.4 Biological Resources*, the Aquamarine Solar Project and Gen-Tie Line could result in potentially significant effects to several species including San Joaquin kit fox, burrowing owl, and ground nesting birds. However, with the implementation of Mitigation Measures BIO-1, BIO-2, and BIO-3, these potential impacts would be reduced to *less-than-significant* levels. The Aquamarine Solar and Gen-Tie project would have no impact or a less-than-significant impact on all other species and biological communities.

As discussed in section *4.5 Cultural Resources*, the Aquamarine Solar Project and Gen-Tie Line would result in potentially significant effects to historic and prehistoric archaeological resources, including human burials. However, with the implementation of Mitigation Measures CR-1 and CR-2, these potential impacts would be reduced to *less-than-significant* levels.

In summary, with the implementation of mitigation measures to be incorporated into the Aquamarine and Gen-Tie project, it is expected that the project would not have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or pre-history.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less-than-Significant Impact with Mitigation Incorporated. This discussion considers the potential impacts of the Aquamarine Solar Project and Gen-Tie Line combined with the incremental effects of other approved, proposed and reasonably foreseeable projects in the vicinity. These cumulative projects comprise those included on Kings County's April 2019 list of pending and approved solar projects. These cumulative projects are listed in Table 11, on the next page, and shown in Figure 10. It is noted that all of the projects on listed in Table 11 comprise solar PV generating facilities. Most other projects that have been proposed and approved in Kings County over the past several years have consisted solely of minor projects such as cell towers, or projects with temporary or infrequent operation (e.g., Kelly Slater's Surf Ranch), or projects that are too far from the project area to contribute to any cumulatively significant effect (e.g., relocation of Baker Commodities facility east of Hanford), or projects for which development applications have been formally withdrawn (e.g., Quay Valley new community project). As such, these projects were not included on the list in Table 11 since there is no potential that they would contribute to a cumulatively significant impact associated with the Aquamarine Solar Project and Gen-Tie Line.

The approach to assessing the significance of a cumulative project impact is based on the provision of Section 15065 of the CEQA Guidelines which states that the effects of a project must be "cumulatively considerable" to be considered significant. CEQA requires a two-step analysis for cumulative impacts, with the first step resulting in a determination of the significance of a cumulative impact for each environmental topic, and the second step resulting in a determination of whether the project contribution is cumulatively considerable. An affirmative finding is required for both steps in order to conclude that a project impact is cumulatively significant.

The following is an evaluation of cumulative impacts by environmental topic area. This discussion is followed by a more general evaluation of the cumulative impacts of the currently proposed and approved projects when considered together with the long range cumulative impacts resulting from implementation of the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan, which is considered by Kings County to be a probable future development under CEQA.

Aesthetics

Aquamarine Solar Project

The Aquamarine project and the other cumulative solar projects are generally located in areas with relatively low visual quality and no significant scenic resources in their vicinities. While the solar generating facilities would represent a visual change to the predominantly agricultural character of their settings, the low profile of the solar facilities would not be out of scale with their rural surroundings. Given also the very low number of visual receivers in the vicinities of the cumulative projects, the visual impacts resulting from each individual solar project would be less than significant.

Most of the cumulative projects are dispersed and not visible from common public viewpoints. In the vicinity of the Aquamarine project site, there are 10 other solar projects located around the intersection Avenal Cutoff Road and 25th Avenue. Of these, four projects have been constructed or partially constructed, including the Kent South, Orion, and Mustang solar projects, and Phase 1 of the Westside Solar Project. Two of the remaining solar projects, Mustang Two and American Kings, have been approved but not yet constructed, and the final four projects (Slate, Daylight Legacy, Solar Blue, and Chestnut) are pending approval. Upon full completion, all of these projects and the proposed Aquamarine Solar Project will occupy a combined area of about 15,040 acres. Overall, the low profile of the solar arrays would be not out of place in the rural setting. These projects would not be visible from any agricultural residences, the nearest of which are located over 0.25 miles east, 1.8 miles west, and 2.0 miles southwest of the combined project areas. (The nearest residence, located 0.25 miles east of the Slate Solar Project, is surrounded by almond orchards which would block views of this and any other solar projects in the vicinity.) The American Kings solar project is located 300 feet south of the nearest base housing at NAS Lemoore across SR-198. This residential community is essentially urban in character and is bordered by the busy SR-198 freeway corridor on the south. The introduction of the solar arrays to the visual setting, across the freeway corridor, would represent a visual change to the southern tier of homes at the base. However, given the low profile of the solar facilities and the existing urbanized character of the NAS Lemoore residential community, and the intervening freeway corridor, this visual change would not represent a significant aesthetic impact associated with the American Kings solar project. None of the other cumulative solar projects in the vicinity, including the Aquamarine Solar Project, would be visible from the NAS Lemoore base housing. As such, there would not be a cumulatively significant aesthetic impact upon the base housing from the cumulative solar projects. Some of the cumulative solar projects (American Kings, Slate, Mustang Two, Westside, and Aquamarine) would be visible from public views available along the nearby roadways, most notably Avenal Cutoff Road. Motorists would observe the low profile solar arrays alongside the roadway for several minutes while traveling through the area. The cumulative effect would not substantially degrade the existing visual character or quality of the area, which would continue to be rural and agricultural in nature. In summary, the incremental aesthetic effects of the cumulative projects would not combine to produce a cumulatively significant impact, and the project *contribution would not be considerable*.

All of the cumulative projects would incorporate minimum and non-intrusive lighting for security, and the solar modules at all of the cumulative projects would be non-reflective and non-glare producing. While several cumulative projects would be in proximity to each other, such as those referenced above, the combined lighting and glare from these projects would not be excessive.

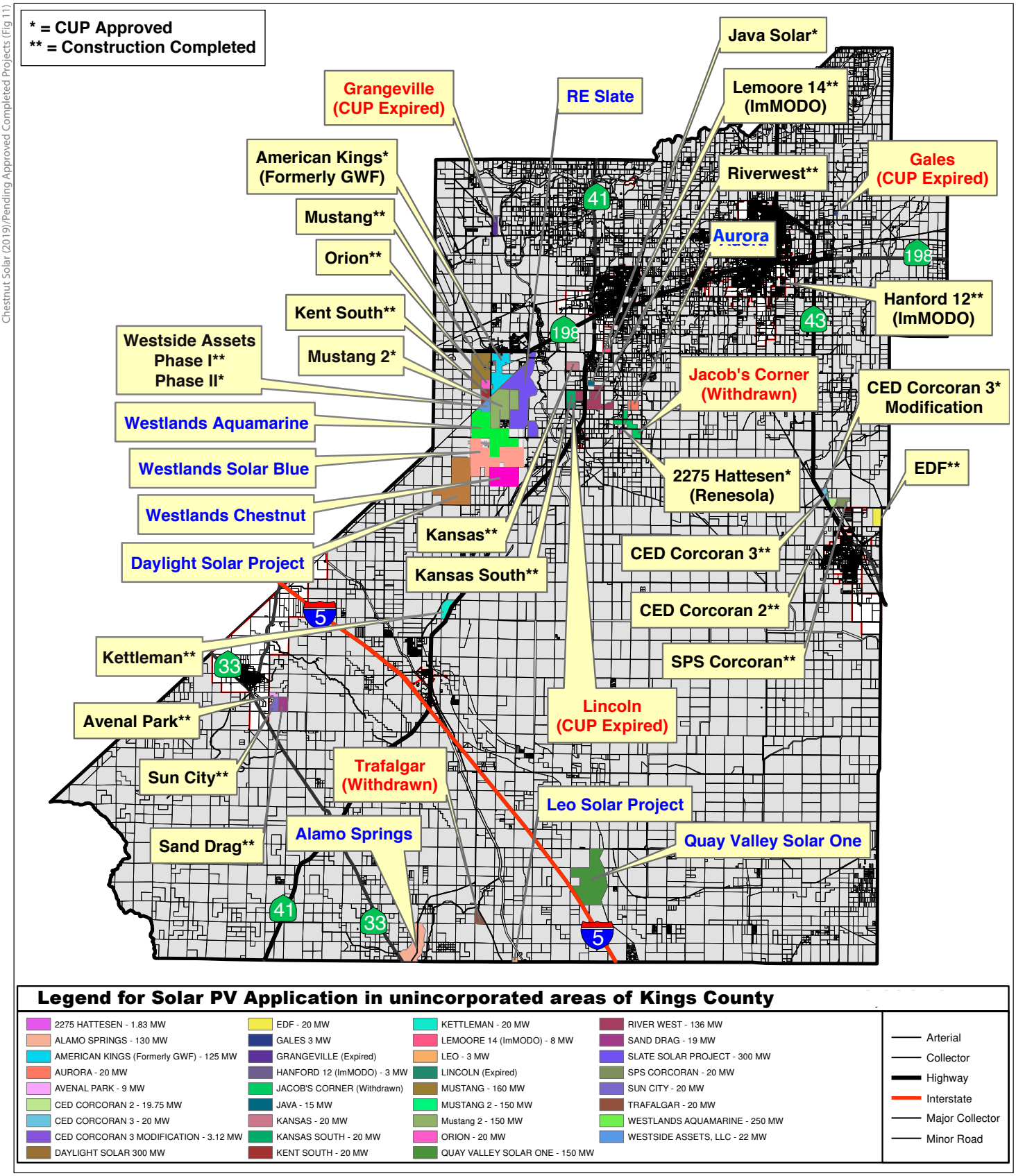
TABLE 11

PENDING, APPROVED, AND COMPLETED SOLAR PV PROJECTS

Project	Acreage	Generating Capacity (MW)	Status (As of 1/31/19)
Sun City	180	20	Constructed
Sand Drag	240	19	Constructed
Avenal Park	86	9	Constructed
CED Corcoran Solar 2	124	20	Constructed
SPS Corcoran	228	20	Constructed
American Kings (former GWF)	978	125	CUP Approved
Sunpower Henrietta (Riverwest)	836	136	Constructed
Kansas South	230	20	Constructed
Aurora	186	20	Pending
Kansas	200	20	Constructed
Mustang	1,422	160	Constructed
EDF	200	20	Constructed
Orion	200	20	Constructed
Kent South	200	20	Constructed
Kettleman	220	20	Constructed
CED Corcoran Solar 3	138	20	Constructed
Hanford 12 (ImMODO)	19	3	Constructed
Westside Solar Project*	187	22	Partially Constructed
Lemoore 14 (ImMODO)	60	8	Constructed
2275 Hattesen (Renesola)	16	2	CUP Approved
Java Solar	96	15	CUP Approved
Mustang 2	2,459	150	CUP Approved
Alamo Springs	985	130	Pending
Westlands Aquamarine*	1,825	250	Pending
CED Corcoran Solar 3 (Modification)	17	3	CUP Approved
Slate	2,731	300	Pending
Daylight Legacy	2,103	300	Pending
Westlands Solar Blue*	1,975	250	Pending
Westlands Chestnut*	960	150	Pending
Totals	**19,101**	**2,252**	

* Projects located within Westlands Solar Park.

Source: Kings County CDA.



Source: Kings County Community Development Agency, April 2019

Pending, Approved, and Completed Solar Projects

Figure 11

Therefore, the incremental lighting from the cumulative projects would not combine to result in a cumulatively significant impact, and the project *contribution would not be considerable*.

Gen-Tie Line

The monopoles in the tower line would constitute its dominant visual elements of the Gen-Tie Line. The towers are planned to consist entirely of tubular steel monopoles, which would range in height from 100 to 180 feet. Conductors would be strung between the towers which would typically be spaced at intervals ranging from 600 to 1,320 feet. The planned use of monopoles instead of lattice steel towers would substantially reduce the profile of the towers and their visual effects. The Gen-Tie Line would pass entirely through flat agricultural landscapes where scenic value is limited. The only residences within one mile of the Gen-Tie Line are the 2 dwellings at the Stone Land Company Ranch on the south side of Nevada Avenue east of Avenal Cutoff Road. These dwellings are set back 200 feet from the gen-tie corridor at its nearest point, and would be visually screened from the Gen-Tie Line by a dense stand of existing mature landscaping trees in the front yard area of the ranch property. With the distance separation from the towers, and the screening of the conductors, and the utilization of narrow-profile monopoles, the Gen-Tie Line would not result in a substantial change to the visual character or quality of the setting of these residences. For the same reasons, the Gen-Tie Line would not result in a substantial change to the visual character or quality of public views along Nevada Avenue. Given the generally low visual quality of the Gen-Tie setting, and the low level of potential visual impact upon existing residences and public views along Nevada Avenue along the Gen-Tie corridor, the visual impacts associated with the Gen-Tie Line would be less than significant.

The only pending project that is in proximity to both the Gen-Tie Line and the two dwellings at the Stone Land Company Ranch is the Daylight Legacy Solar Project located on the north side of Nevada Avenue approximately 2.4 miles east of two ranch dwellings. Given the low profile of the solar facilities at the Daylight Legacy project, that project would not be visible from the two ranch dwellings and thus would have no visual impact upon the dwellings. The Daylight Legacy Solar Project would front onto Nevada Avenue for a distance of 1.5 miles, and would be visible along the roadside by passing motorists. Given the generally low visual quality of the Gen-Tie setting, and the low level of potential visual impact upon public views along Nevada Avenue along the Gen-Tie corridor, the combined visual impacts associated with the Gen-Tie Line and Daylight Legacy project would be less than significant. Therefore, the cumulative visual impact resulting from the Gen-Tie Line and other projects would not be significant, and the contribution from Gen-Tie Line would *not be cumulatively considerable*.

Agriculture and Forestry Resources

Aquamarine Solar Project

Most the cumulative projects would occupy agricultural lands that are either cultivated for row crops or used for grazing. Some of the cumulative sites, including the western half of the Aquamarine project site, are mapped as Farmland of Statewide Importance under the California Department of Conservation's Farmland Mapping and Monitoring Program. Most of the cumulative projects would incorporate dry-land farming with sheep grazing as part of their operations, while one project would incorporate crop production on a portion of its site. At the end of their productive lives, all of the cumulative solar projects, including the Aquamarine Solar Project, would be decommissioned. All project operators would implement soil reclamation with financial

assurances to return the sites to their pre-project conditions in accordance with mitigation measures similar to MM AG-1 and MM AG-2, as set forth for this project in section *4.2 Agriculture and Forestry Resources*. As such, none of the cumulative projects would result in the permanent conversion of Farmland to non-agricultural uses. Likewise, none of the cumulative projects would otherwise result in the conversion of Farmland to non-agricultural use. The incremental effects from the collective operations of the solar projects upon agricultural resources would not be cumulatively significant, and the project *contribution would not be considerable*.

Most of the cumulative projects, including the proposed project, are located in agricultural zoning districts that permit solar generating facilities as a conditionally permitted use. All of the cumulative projects meet the required County Development Code requirements for conditional use permits, and also the requirements for solar facilities in agricultural zones. Therefore, none of the cumulative projects would conflict with applicable agricultural zoning. As such, there would be no cumulative impact in terms of land use plans, policies, and regulations, and the project would make *no contribution* to such a cumulative impact.

Most of the cumulative projects, including the western half of the Aquamarine project, are subject to either Land Conservation contracts or Farmland Security Zone contracts under the Williamson Act. All of these projects would either initiate contract cancellation proceedings or would meet State and County principles of compatibility to enable solar generating facilities to occupy the contracted lands. All of the cumulative projects that elect to pursue the compatibility options would maintain sufficient on-site agricultural productivity to meet the State and County principles of compatibility under the Williamson Act. Therefore, these projects are expected to maintain active Land Conservation or Farmland Security Zone contracts for the life of the solar projects without conflicting with the Williamson Act. Therefore, none of the cumulative projects would individually result in significant impacts in terms of conflicting with the Williamson Act. As such, the cumulative impact in terms of conflicts with the Williamson Act would be less than significant, and project *contribution would not be considerable*.

In summary, the incremental impact of residual effects from the collective operations of the cumulative solar projects upon agricultural resources would not be cumulatively significant, and the project *contribution would not be considerable*.

With respect to forestry resources, there are no forest lands or lands zoned for forest land or timberland at or near any of the cumulative project sites. Therefore, the individual projects would have no impact on forest land. As such, there would be no cumulative impact on forest land and the project would *make no contribution* to such a cumulative impact.

Gen-Tie Line

Approximately 54 percent of the 8.7-mile Kings County segment of the Gen-Tie Line passes through Prime Farmland or Farmland of Statewide importance. The Gen-Tie Line would result in permanent disturbance only at the sites of the monopoles, each of which would result in the removal approximately 700 square feet of Farmland. The 30 monopoles planned on lands mapped as Farmland would result in a total displacement of 21,000 square feet (less than ½ acre) of Farmland. This would represent a less-than-significant impact to Farmland.

The cumulative projects that are located on Farmland would be required to restore the agricultural soils on their sites upon decommissioning. Thus each project would result in no permanent conversion of Farmland, and therefore would have a less-than-significant impact upon agricultural resources. The cumulative impact to Farmland would not be significant, and the contribution of the Gen-Tie Line would *not be cumulatively considerable*.

Air Quality

Aquamarine Solar Project and Gen-Tie Line

With respect to regional air quality, the Air District guidance states that any project that would individually have a significant impact on regional air quality (i.e., exceed significance thresholds for ROG or NO_x) would also be considered to have a significant cumulative air quality impact. Project-specific emissions of ozone precursor pollutants (ROG and NO_x) and PM_{10} were found to be less-than-significant for the proposed project, as discussed in section *4.3 Air Quality*. The Air District guidance also states: "[a] Lead Agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including, but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located" (SJVAPCD 2015, p. 66). As discussed in section *4.3 Air Quality*, under item 'a', the project would fulfill its share of achieving the Air District's emission reduction commitments in the PM_{10} and Ozone attainment plans through its obligation to implement ISR emission reduction measures under Air District Rule 9510. Therefore, the project would fully comply with the applicable air quality plans and would not conflict with or obstruct their implementation. Therefore, the project contribution to cumulative regional air quality impacts *would not be considerable*.

Local air pollutants that are relevant include PM_{10} emissions and toxic air contaminants (TACs) from construction activity. Construction period PM_{10} emissions would be localized. As shown in Table 6b, the combined construction exhaust and dust emissions from the Aquamarine Solar Project would be less than the PM_{10} significance threshold of 15 tons with mitigation. Since the total PM_{10} emissions would be below the total PM_{10} significance threshold, construction period total PM_{10} emissions impacts would be less than significant for the Aquamarine Solar Project.

In the project vicinity, there are seven other solar projects that have been approved or are pending approval but have not yet been constructed. These include the Mustang Two project adjacent to the east, the Slate project adjacent to the northeast, the Westside Solar project (Phase 2) adjacent to the north, the American Kings project located about 0.5 miles north, the Daylight Legacy project located one mile southwest, the Westlands Solar Blue project adjacent to the south, and the Westlands Chestnut project located 0.5 miles south. Depending on construction schedules, the construction of the Aquamarine Solar Project could overlap with the construction of one or more of these nearby solar projects. Since construction of the three other projects within the Westlands Solar Park would not be constructed concurrently with the Aquamarine project, under a worst-case scenario, it is assumed that the four other nearby projects would be under construction at the same time as the Aquamarine project, and that the pace of construction and equipment usage would be same for the other projects as for the Aquamarine project. The total PM_{10} annual emissions from the Aquamarine project was calculated to be 1.78 tons (or 0.0071 tons per MW), after implementation of mitigation measures required by the Air District. The total electric power

generated by the five cumulative solar projects (including the Aquamarine project) would be 1,225 MW. Assuming the other projects would emit PM_{10} at the same rate as the Aquamarine project, the total annual emissions from the five cumulative projects (including the Aquamarine project) would be 8.70 tons (i.e., 0.0071 tons/MW X 1,225 MW). With the addition of the PM_{10} emissions from the Gen-Tie Line (i.e., 5.40 tons), the total cumulative PM_{10} emissions would total 14.10 tons. Thus the cumulative PM_{10} emissions from the five projects (including the Gen-Tie Line) would be below the 15-ton significance threshold for PM_{10}. Therefore, the cumulative PM_{10} emissions would be less than significant, and the project's *contribution would not be considerable*.

With respect to cumulative emissions of Toxic Air Contaminants (TACs), it is important to note that DPM concentrations diminish rapidly from the source. Pollutant dispersion studies have shown that there is about an 80 percent drop off in DPM concentrations at approximately 1,000 feet from the source (CARB 2005). Thus multiple sources of DPM emissions must all be proximate to a receptor to have an additive effect to DPM concentrations at the receptor site. Since the nearest sensitive receptors to the Aquamarine Solar Project are at least 1.3 miles from the nearest site boundary, most if not all DPM emissions from the project would disperse into the atmosphere before reaching the nearest sensitive receptor locations.

While the SJVAPCD does not have specific significance criteria for assessing cumulative health risks, the SJVAPCD significance criterion of an increase in cancer risk of more than 20 in a million persons from an individual facility or project over a 70-year lifetime for the maximally exposed individual can be used as a conservative measure of cumulative significance (SJVAPCD 2014b). This significance criterion is applied to individual projects where there is a potential for a significant health impact to nearby sensitive receptors. The use of this same threshold for cumulative TAC impacts is stringent compared to thresholds being considered elsewhere. For example, in preparing the updated draft CEQA Guidelines for the Bay Area Air Quality Management District, the BAAQMD presented substantial evidence in support of a cumulative TAC significance criterion of an increased cancer risk of more than 100 persons per million persons (BAAQMD 2009). This threshold applies to projects that are located within 1,000 feet of the proposed project. (The effects of projects outside this distance are only considered by lead agencies if they are large enough to have unique effects (e.g., ports or refineries)(I&R 2018)). To illustrate the 20 in 1 million criterion, the TAC impact associated with the construction of a 1 million square-foot commercial development (e.g., a large regional shopping center) would fall to well under the significance threshold (i.e., cancer risk would be less than 10 cases per million) at a distance of 300 feet from the project site (BAAQMD 2010).

Applying the 1,000-foot criterion to define the geographic scope of the cumulative TAC analysis, there are four solar projects within this distance from the Aquamarine site (i.e., Westside Phase 2, Mustang Two, Slate, and Westlands Solar Blue). The combined construction intensity (i.e., number of diesel emitting vehicles and equipment in operation) from these five solar PV projects (including Aquamarine) would be less than that of a regional shopping center. In addition, the nearest receptors that would be potentially subject to cumulative DPM emissions would be 1.3 miles from the Aquamarine Solar Project site, and at least 1.0 mile from the nearest of the other four cumulative projects. These distances are at least 18 times farther than the 300-foot distance that TAC concentrations in the shopping center example would fall to well below the significance threshold. It should also be considered that DPM would be emitted from solar projects only during their relatively brief construction periods (i.e., up to 3 years depending on project size), which is far less than the 70-year exposure time considered in health risk assessments for comparison to the significance threshold. Thus, it is not expected the cumulative effects would result in an increased

cancer risk above 20 in one million at the nearest sensitive receptor common to the cumulative approved and pending solar projects in the vicinity if the Aquamarine project. Therefore, the project contribution to the cumulative health risk impact would not be significant, and the contribution to the cumulative health risk impact from the Aquamarine Solar Project would *not be considerable*.

Regarding the Gen-Tie Line, there is one solar project that would be constructed in proximity to the Gen-Tie Line. The southern portion of the Daylight Legacy Solar Project could be under construction at the same time as the adjacent segment of the Gen-Tie Line. The only sensitive receptors in the vicinity are the two dwellings located at the Stone Land Company Ranch, which is located 2.5 miles west of the nearest point at which diesel exhaust would be generated by both the Gen-Tie project and the Daylight Legacy project. As discussed above, the Gen-Tie construction activity would progress relatively quickly from one monopole site to the next, so the duration of TAC emissions at any given location would be no more than two weeks. Similarly, heavy equipment activity at the southern end of the Daylight Legacy project would also be short in duration. Considering that TAC concentrations would likely be fully dissipated well short of the 2.5 miles to the nearest sensitive receptors common to both projects, and given the very brief exposure periods at the sensitive receptor locations, there is no potential that cumulative health risk would exceed the significance threshold of 20 addition cancer cases in one million. Therefore, the cumulative health risk impact associated with Gen-Tie Line construction would be less than significant and the project contribution to the cumulative health risk impact would *not be considerable*.

Biological Resources

Aquamarine Solar Project and Gen-Tie Line

The analysis in section *4.4 Biological Resources* identified potential project-specific impacts to San Joaquin kit fox, burrowing owls, and nesting birds. Mitigation measures MM BIO-1, MM BIO-2, and MM BIO-3 are specified in the event potential impacts to these species are identified at the Aquamarine site or Gen-Tie corridor prior to project construction. The project area is not uniquely suitable for these species, and abundant habitat for these species is present on the agricultural lands of the region. In addition, all of the other cumulative projects would be subject to similar mitigation measures in the event these species appear on any of those sites prior to construction. Thus impacts to these species would be reduced to less-than-significant levels at each cumulative project site. The combined incremental less-than-significant effects from these projects would not result in a cumulatively significant impact to these species. Therefore, the cumulative impacts to these species would not be significant, and the project *contribution would not be considerable*.

As discussed in section 4.4, there is a potential cumulative impact to foraging habitat for Swainson's hawk. As part of its biological assessment for the Program EIR on the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan, conducted in 2017, LOA completed a comprehensive analysis of potential impacts to Swainson's hawk foraging habitat associated with development of the WSP Master Plan area and all other approved, pending, and completed projects within a 10-mile radius of the WSP plan area. The analysis identified all known Swainson's hawk nests that were previously observed during surveys by LOA or others. In 2018, LOA biologists conducted follow-up surveys to identify currently active nests. LOA biologists also reviewed and updated their detailed 2017 analysis of foraging habitat within a 10-mile radius of the WSP plan area and concluded that the abundant habitat that would remain after full development of the WSP plan area, and all other

cumulative projects (including projects proposed since 2017) within this 10-mile radius, would be more than sufficient to support all of the known Swainson's hawk nests within this radius, with surplus capacity to support additional nesting pairs. (The full analysis is contained in Appendix D of LOA's biological report, which is contained in Appendix C of this document).

LOA's 2018 updated assessment began with an inventory of known Swainson's hawk nests within a 10-mile radius of the project site. The study found that there are 36 documented nests within this radius, the nearest of which is over 7.5 miles from the Aquamarine project site.

LOA's analysis of potential cumulative impacts to Swainson's hawk foraging habitat employed a study methodology established by Estep Environmental Consulting (Estep), and which has been applied in similar studies on previous solar projects in Kings County. The first step in this analysis is to make a determination as to the amount of surplus foraging habitat available that is not considered to be required by existing Swainson's hawks that are currently nesting in the area. Based on LOA's application of Estep's methodology, it was calculated that there is currently a surplus of 135,492 acres of suitable foraging habitat within the study area. (See LOA's Biological Assessment in Appendix C of this document for a full description of the habitat calculations.)

In order to determine the potential cumulative impacts to foraging habitat, all of the pending, approved, and completed solar projects within the study area were identified and mapped. It was determined that the 23 cumulative projects (including the Aquamarine project) occupy a total of 34,583 acres within the study area (this includes the entire WSP plan area of 20,938 acres). For purposes of analysis, this entire acreage was conservatively assumed to comprise suitable foraging habitat, whereas the actual total would be less after subtracting acreage in tree crops and vineyards which provide little or no foraging value for Swainson's hawks.

In order to determine if this cumulative loss of foraging habitat represented a significant cumulative impact, Estep established that a reduction of surplus habitat to less than 70 percent relative to pre-project conditions would represent a cumulatively significant impact (Estep 2012). As presented in LOA's Biological Assessment (see Appendix C of this document), it was calculated that the cumulative projects would reduce the total surplus foraging habitat in the study area to 100,909 acres (i.e., 135,492 acre pre-project surplus minus 34,583 acres cumulative loss). This remaining acreage of surplus foraging area represents 74.5 percent of the pre-project total of surplus foraging area. Since the remaining surplus foraging acreage is greater than 70 percent of the pre-project surplus foraging acreage in the study area, the cumulative impact to the Swainson's hawk foraging acreage in the study area was determined to be *less than significant*. Therefore, the cumulative impact on Swainson's hawk foraging habitat would be less than significant, and the project *contribution would not be considerable*.

The Aquamarine project site and Gen-Tie corridor include no wetlands, jurisdictional waters, streams or riparian areas, and therefore the project would have no impact upon such features and would make *no contribution* to a cumulatively significant impact to such features.

None of the cumulative projects would conflict with an applicable habitat conservation plan or a natural community conservation plan. As such, there would be no cumulative impact in this regard, and the project would make *no contribution* to such a cumulative impact.

In summary, the cumulative impact to biological resources would be less than significant, and the project *contribution would not be considerable*.

Cultural Resources

Aquamarine Solar Project and Gen-Tie Line

The probability that any previously undiscovered cultural resources are present at any of the cumulative project sites is low. However, in the event that buried cultural materials are encountered during grading or excavation, all of the cumulative projects would be subject to mitigation measures similar to those identified for the Aquamarine Solar Project and Gen-Tie Line in MM CR-1 and MM CR-2 in Section *4.5 Cultural Resources*. The implementation of these measures at each cumulative site would ensure that site-specific impacts to cultural resources would be reduced to less-than-significant levels at each cumulative site. The collective incremental effects after mitigation would result in a less-than-significant cumulative impact to cultural resources, and the project *contribution would not be considerable*.

Energy

Aquamarine Solar Project and Gen-Tie Line

As discussed in Section *4.6 Energy*, the construction of the Aquamarine Solar Project and Gen-Tie Line would be subject to an array of regulatory requirements for the efficient use of fuel, waste reduction and diversion, and energy efficient building standards. These requirements would ensure that the Aquamarine and Gen-Tie projects and the other approved and pending projects would not result in the wasteful, inefficient, or unnecessary use of energy. Therefore, the cumulative energy impact would be less than significant, and the project impact would *not be cumulatively considerable*.

As is the case with the Aquamarine Solar Project, the objective of the other cumulative solar projects is to generate renewable solar energy in order to provide for the reduced statewide reliance on non-renewable fossil-fueled generation. The operation of the solar facilities would allow for the decommissioning of equivalent generation from natural gas fired power plants. The cumulative projects would consume a relatively small amount of electricity to operate lights and equipment, but this energy consumption would be negligible compared to the clean energy produced by the solar projects.

Geology and Soils

Aquamarine Solar Project and Gen-Tie Line

Potential impacts due to geologic and soils conditions tend to be highly localized and generally do not extend beyond the boundaries of a project, particularly in areas of level terrain such as the San Joaquin Valley. The cumulative projects would be subject to similar geologic and soils conditions and hazards as discussed for the Aquamarine Solar Project and Gen-Tie Line in section *4.6 Geology and Soils*. While not all hazards would be present at all sites, or to the same degree, the potential hazards include seismic shaking, liquefaction, seismic settlement, and soil expansion, among other things. The vulnerability of each cumulative project to seismic and soil hazards would be subject to confirmation and detailed characterization through the completion of geotechnical investigations

required prior to the development of each site. As is the case with the Aquamarine solar and Gen-Tie project, it is expected that the potential seismic and geologic hazards and any adverse soil conditions at the cumulative project sites would be mitigated through building code requirements and design recommendations of geotechnical engineers for each project. The specified soil engineering measures would be expected to mitigate or avoid all potentially hazardous geologic and soils conditions to less-than-significant levels at each site. While constructing the facilities to meet the seismic design criteria of the California Building Code would not completely eliminate the potential for damage during a major earthquake, it would reduce the potential impacts to public safety and property to less-than-significant levels at the cumulative projects. Given also the unlikelihood of geologic and soils hazards extending beyond the boundaries of individual project sites, the cumulative geologic and soils impacts would be less than significant. Therefore, any incremental hazards remaining at each cumulative site after mitigation would not collectively result in a cumulatively significant impact, and the *project contribution would not be considerable*.

With respect to paleontological resources, there is a low probability that any previously undiscovered paleontological resources are present at any of the cumulative project sites. However, in the event that buried paleontological resources are encountered during grading or excavation, all of the cumulative projects would be subject to mitigation measures similar to those identified for the Aquamarine Solar Project and Gen-Tie Line in MM GEO-1 in section *4.6 Geology and Soils*. The implementation of these measures at each cumulative site would ensure that site-specific impacts to paleontological resources would be reduced to less-than-significant levels at each cumulative site. The collective incremental effects after mitigation would result in a less-than-significant cumulative impact to paleontological resources, and the project *contribution would not be considerable*.

Greenhouse Gas Emissions

Aquamarine Solar Project and Gen-Tie Line

As discussed in section *4.7 Greenhouse Gas Emissions*, the project solar generating facilities comprise a renewable source of energy which will help displace an equivalent amount of existing fossil-based generation. The construction and operation of the Aquamarine project and Gen-Tie Line would generate some greenhouse gas emissions from fossil-fueled vehicles and equipment; however, these emissions would be more than offset by the avoided greenhouse gas emissions resulting from the Aquamarine project's renewable electricity generation. Each of the cumulative projects also comprises a source of renewable solar energy, and collectively they would allow the avoidance of substantial existing fossil-fueled power generation. Therefore, the cumulative impact would not be adverse, and the project would make *no contribution* to an adverse cumulative effect.

Hazards and Hazardous Materials

Aquamarine Solar Project and Gen-Tie Line

Each of the cumulative sites, including the Aquamarine project site and Gen-Tie corridor, would be subject to similar hazards, including potential discharges of hazardous materials during project construction and operation, and potential hazards from existing environmental conditions that may be present from past activities at the sites. In general, most potential hazards would be highly localized and not likely to extend beyond individual project sites. Each cumulative project would be required to implement an approved Hazardous Materials Business Plan (HMBP) to address potential

hazardous events at the project, and also would be required to comply with all federal, state, and local laws and regulations regarding transport, handling, storage, and use of hazardous materials. Each cumulative project would also be required to identify potentially hazardous environmental conditions associated with historical uses of the sites through the preparation of Environmental Site Assessments, and each project proponent would be required by law to remediate or remove any identified contaminant sources from the site. The implementation of required plans and protocols relative to potential hazards and hazardous materials would reduce the associated impacts to less than significant levels at each project site. As discussed above, the impacts from hazards and hazardous materials would generally be confined to each project site and would not be given to accumulation with similar effects from other projects in the vicinity. Therefore, any incremental effects related to hazards and hazardous materials would not collectively result in a cumulatively significant impact, and the *project contribution would not be considerable*.

Hydrology and Water Quality

Aquamarine Solar Project and Gen-Tie Line

This discussion covers potential cumulative drainage and water quality impacts, water quality impacts, and groundwater supplies.

With respect to stormwater drainage, the Aquamarine project, Gen-Tie Line and the other cumulative projects have similar natural conditions like flat topography, semi-arid climate, and lack of natural drainage courses nearby. In addition, the solar projects would all maintain over 90 percent of their sites in permeable soil with vegetated cover. The Gen-Tie Line would result in a total of less than one acre of permanent coverage with impervious surfaces. Thus the small amount rainfall received at each site would tend to percolate into the ground, and would not tend to leave the site or result in off-site drainage impacts. Even under major storm conditions, any off-site runoff would likely be captured by one of the many irrigation canals or agricultural drainage ditches in the area. Thus even where cumulative projects are located in proximity to each other, there is virtually no potential for runoff from several sites to combine to result in downstream drainage impacts. Therefore, the potential cumulative stormwater drainage impacts would be less than significant, and the project *contribution would not be considerable*.

With respect to water quality, during the construction of each cumulative project, including the Aquamarine Solar Project and Gen-Tie Line, there is a potential for erosion of exposed soils and spills of hazardous materials that could have an adverse impact on surface water quality. However, each cumulative project would be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) that would specify measures to prevent and control erosion and discharges of hazardous materials. These control measures would reduce the potential water quality impacts at each cumulative site to less-than-significant levels. As discussed above, the natural and built conditions at each project site would virtually eliminate the potential for stormwater runoff to leave the site. Therefore, the potential for polluted surface water to leave each site is also small, and the potential for polluted surface water from several sites to result in a collective water quality impact to downstream water bodies is negligible. Therefore, the cumulative impacts to water quality would be less than significant, and the project *contribution would not be considerable*.

With respect to flooding and inundation, neither the Aquamarine project site, the Gen-Tie corridor, nor the other cumulative project sites in the immediate vicinity of the project site and corridor are subject to flooding during a 100-year storm event, or to inundation in the event of upstream dam failure. While some cumulative projects located near the Kings River and east of the river may be subject to flooding and inundation, the proposed project site is subject to no impacts from these conditions, and therefore the project would *make no contribution* to any cumulative flooding impact.

With respect to groundwater supplies, each cumulative project, including the Aquamarine Solar Project and Gen-Tie Line, would require water during construction and operation. The demand for water at each site would be highest during construction for purposes of dust control and soil conditioning. For most cumulative projects, construction water would be supplied by existing agricultural wells or new wells. It is estimated that construction water demand for each project would be about 0.2 acre-feet per acre. In the groundwater basin beneath the project area, the safe yield has been determined to be about 0.24 to 0.35 acre-feet per acre per year. Therefore, even if the other cumulative projects in the vicinity were constructed concurrently with the Aquamarine and Gen-Tie project, and were all constructed in one year, the collective groundwater pumping rate is unlikely to exceed the safe yield of the aquifer. (Note: Since the larger solar projects would be constructed over a longer than one-year period, the average water consumption during construction would be less than 0.2 acre-feet per acre per year.) The operational water supplies for each solar project would mainly be used for panel washing, while little or no water would be required for operation of the Gen-Tie Line. As discussed in in section *4.10 Hydrology and Water Quality*, operational water demands for the Aquamarine project are estimated to be approximately 0.02 acre-feet per acre per year, or about 10 percent of the construction water demand rate. Assuming that the other cumulative projects in the project's groundwater basin rely solely on well water for operational needs, collective water demands would be well within the safe yield of the aquifer. Therefore, the cumulative projects would not substantially decrease groundwater supplies. In addition, since all of the cumulative projects would retain 90 percent or more of their site areas in permeable vegetated cover, the projects would not interfere substantially with groundwater recharge, individually or collectively, and would not impede sustainable groundwater management of the basin. Therefore, the cumulative impact to groundwater supplies would be less than significant, and the project *contribution would not be considerable*.

Land Use and Planning

Aquamarine Solar Project and Gen-Tie Line

As discussed in section *4.11 Land Use and Planning*, the Aquamarine Solar Project and Gen-Tie Line would not physically divide an established community, and would result in less-than-significant land use impacts to surrounding properties. Similarly, none of the cumulative projects would divide existing communities, and all of the cumulative projects would result in less than significant land use impacts upon surrounding properties. The cumulative incremental land use impacts resulting from the collective construction and operation of the cumulative projects would be less than significant, and the project *contribution would not be considerable*.

The General Plan land use designations applicable to all of the cumulative projects include solar generating facilities and transmission lines as allowed uses. All of the cumulative projects, including the Aquamarine project and Gen-Tie Line, are located either in agricultural zoning districts that

permit solar generating facilities, or in commercial zoning districts that permit solar projects. All of the cumulative solar projects meet the required County Development Code requirements for conditional use permits for solar facilities, and the Gen-Tie Line is a permitted use in its agricultural zone. Therefore, none of the cumulative projects would conflict with any land use plans, policies, or regulations. As such, there would be no cumulative impact in terms of land use plans, policies, and regulations, and the project would make *no contribution* to such a cumulative impact.

Mineral Resources

Aquamarine Solar Project and Gen-Tie Line

None of the cumulative projects, including the Aquamarine Solar Project and Gen-Tie Line, would result in the loss of availability of a known mineral resource, and none would result in the loss of availability of a locally important mineral resource delineated on a local land use plan. As such, there would be no cumulative impact to mineral resources, and the project would make *no contribution* to such a cumulative impact.

Noise

Aquamarine Solar Project

As discussed in section *4.12 Noise*, the nearest sensitive noise receptors to the Aquamarine project site are rural residences located 1.3 to 1.8 miles east of the Aquamarine site, and a group of 20 residences at the Shannon Ranch located 2.0 miles southwest. During project construction, noise generated by equipment and vehicles on the project site would not be audible at these locations. Operational noise levels would be lower. Traffic generated during construction would result in slight increase in ambient noise levels along the affected roadways, but the increased noise level would not be perceptible at the receptor locations. Noise levels generated by operational traffic would be lower.

During construction, noise generated at the Aquamarine project site could combine with noise generated by other projects in the immediate vicinity and result in cumulatively higher noise levels. However, there would be no sensitive receptors in the vicinity that would be affected by such higher cumulative noise levels. This would also be the case for cumulative traffic generated during construction and operational phases of the cumulative projects. Therefore, the incremental temporary and permanent noise levels resulting from the combined construction and operation of the Aquamarine Solar Project and other cumulative projects would be less than significant, and the project *contribution would not be considerable*.

Construction activities at the cumulative projects would result in ground vibration, although such vibration would not be detectable beyond the project boundaries of each project site. Therefore, the cumulative projects would result in no cumulative vibration impacts, and the Aquamarine project would make *no contribution* to such a cumulative effect.

Gen-Tie Line

The only residences within one mile of the Gen-Tie Line are the two dwellings at the Stone Land Company Ranch on the south side of Nevada Avenue east of Avenal Cutoff Road. These dwellings are set back 200 feet from the Gen-Tie corridor at its nearest point, and would not be subject to significant

noise or vibration impacts during Gen-Tie construction. The only pending project that is in proximity to both the Gen-Tie Line and the two dwellings at the Stone Land Company Ranch is the Daylight Legacy Solar Project located on the north side of Nevada Avenue approximately 2.4 miles east of two ranch dwellings. At this distance, the construction noise and vibration at the Daylight Legacy Solar Project would be imperceptible at the Stone Land Company Ranch residences, and thus would not combine with the noise and vibration from Gen-Tie construction to result in cumulatively significant noise or vibration impacts. Therefore, the cumulative temporary and permanent noise and vibration impacts resulting from the Gen-Tie Line and other projects would not be significant, and the contribution from Gen-Tie Line would *not be cumulatively considerable*.

Population and Housing

Aquamarine Solar Project and Gen-Tie Line

None of the cumulative projects, including the Aquamarine Solar Project and Gen-Tie Line, would include a residential component so they would not directly induce population growth in the area. The construction and operational workers for the cumulative projects are expected to be drawn from the existing labor pool in the region, and thus the cumulative projects would not indirectly result in population growth. Additionally, none of the cumulative projects would result in the extension of roads or utilities to lands not currently served by urban infrastructure, and thus would not induce unplanned urban development into the rural areas of the County. Therefore, the cumulative projects would result in no cumulative inducement of population growth in the area, and the project would make *no contribution* to such a cumulative effect.

None of the cumulative projects currently include housing on their sites. Therefore, the cumulative projects would result in no cumulative impacts with respect to displacement of housing or population, and the project would make *no contribution* to such a cumulative effect.

Public Services

Aquamarine Solar Project and Gen-Tie Line

Fire protection services for all cumulative projects, including the Aquamarine Solar Project and Gen-Tie Line, would be provided by the Kings County Fire Department. The potential demand for Fire Department services is expected to be very low at each cumulative project site. Thus the collective demand for Fire Department services is also expected to be low, and would not cumulatively result in the need for new or expanded facilities. Therefore, the cumulative impact to fire services would be less than significant, and the project *contribution would not be considerable*.

Police projection services for all cumulative projects, including the Aquamarine Solar Project and Gen-Tie Line, would be provided by the Kings County Sheriff's Department. The potential demand for Sheriff's Department services is expected to be very low at each cumulative project site. Thus the collective demand for Sheriff's Department services is also expected to be low, and would not cumulatively result in the need for new or expanded facilities. Therefore, the cumulative impact to Sheriff's services would be less than significant, and the *project contribution would not be considerable*.

There would be little or no demand for other County services from the project, or from any of the other cumulative projects, and would not cumulatively result in the need for new or expanded facilities. Therefore, the cumulative impact to other County services would be less than significant, and the project *contribution would not be considerable*.

Recreation

Aquamarine Solar Project and Gen-Tie Line

Since neither the Aquamarine Solar Project, Gen-Tie Line, nor any of the other cumulative projects would include housing or employees stationed at their sites, they would not result in increased use of existing recreational facilities. Neither the project nor any of the other cumulative projects would include recreational facilities in their projects, so there would be no adverse physical effects resulting from such facilities. As such, there would be no cumulative impact associated with recreational facilities, and the project would make *no contribution* to such an impact.

Transportation

Aquamarine Solar Project

As discussed in section *4.17 Transportation*, the highest rate of traffic generation from the Aquamarine Solar Project would occur during the peak period of construction activity. As discussed, the traffic volumes generated during the peak construction period for the project would have a less-than-significant impact on the performance of affected roadways. All of the affected roadway segments have substantial unutilized traffic capacity, and most operate at Level of Service B while two segments operate at LOS C, well within acceptable service levels. During the peak construction period, the roadway segment that would be most affected by cumulative traffic (i.e., Avenal Cutoff Road) would be subject to traffic volume increases of up to 8 percent during the peak construction period for the Aquamarine project. The project traffic would not result in a change in Level of Service or a degradation of LOS to unacceptable levels on any affected roadway segment. Therefore, the project would not conflict with a program, plan, ordinance or policy addressing the circulation system, and the impact would be less than significant.

There are six other approved and pending projects in the immediate project vicinity that have not yet been constructed, and which are likely to utilize the same major access roads as the Aquamarine project, particularly Avenal Cutoff Road. (These projects include the Mustang Two, Slate, and American Kings projects, as well as other projects within Westlands Solar Park such as Westside Phase 2, Solar Blue, and Chestnut). For purposes of this cumulative analysis, it is assumed that: 1) none of the other projects in Westlands Solar Park would be constructed concurrently with the Aquamarine project; 2) the peak construction traffic from the remaining three projects would occur concurrently with the peak construction traffic from the Aquamarine Solar Project; 3) the pacing of construction at the other projects would be similar to the Aquamarine Solar Project's pacing such that traffic volumes generated during the peak construction periods for the other nearby projects would be similar to those of the Aquamarine Solar Project, and; 4) the remaining three projects contribute volumes of peak construction traffic to Avenal Cutoff Road that are proportional to the traffic volumes from the Aquamarine Solar Project. Based on these worst-case assumptions, it was calculated that the cumulative traffic volume on Avenal Cutoff Road during the concurrent peak construction periods for the four cumulative projects (including Aquamarine) would increase by

about 2,012 daily trips, representing a 32 percent increase over baseline traffic volumes. This traffic volume increase would not result in a degradation of service level on Avenal Cutoff Road, which would continue to operate at LOS C during the temporary period of peak construction activity, thus remaining well within acceptable service levels (see Table 10 in section *4.17 Transportation*). All other roadways affected by cumulative traffic would be subject to smaller volume increases during peak construction periods and would also not be subject to change in service levels or degradation of LOS to unacceptable levels. During periods of less intensive construction activity and during project operations, the cumulative traffic generation would be substantially less. Therefore, the cumulative projects would not conflict with a program, plan, ordinance or policy addressing the circulation system; and thus the cumulative impact would be less than significant, and the project *contribution would not be considerable*.

With respect to traffic safety hazards, there is a potential for creation of hazardous driving conditions during the construction periods for the cumulative projects, including the Aquamarine Solar Project. Large slow moving trucks could result in temporary congestion near the project entrances, and could pose a safety concern due to abrupt changes in the speed of traffic flow, or due to slow turning movements across on-coming lanes of traffic. To address potential traffic safety hazards, all of the cumulative projects, including the Aquamarine project, would implement traffic control measures similar to those identified in MM TR-1a in section 4.17 for the Aquamarine Solar Project. These measures would reduce the potential traffic safety impacts at each cumulative project site to less-than-significant levels. The remaining incremental traffic safety effects resulting from collective truck traffic at the cumulative projects would be less than significant cumulatively, and the project *contribution would not be considerable*.

Gen-Tie Line

As discussed in section *4.17 Transportation*, the traffic generated by the Gen-Tie Line would be very light during project construction and negligible during operation. During construction, the low traffic volumes are a function of the dispersed nature of transmission line construction, the relatively small number of truck and worker commute trips that would be generated at any given work site, the short duration of construction activity at each work site, and the broad distribution of construction traffic. During Gen-Tie operation, the inspection, maintenance and repair tasks would be infrequent and involve a small number of workers, vehicles, and equipment. Therefore, the cumulative traffic impact resulting from other cumulative projects and the Gen-Tie Line would be less than significant, and the contribution from the Gen-Tie Line would be *not cumulatively considerable*.

With respect to traffic hazards, it is expected that all of the cumulative projects, including the Gen-Tie project, would be required to prepare and implement traffic safety plans to manage construction traffic, similar to the plan required under Mitigation Measure TR-1b for the Gen-Tie Line. Therefore, the cumulative impact with respect to traffic hazards would be less than significant, and the contribution from the Gen-Tie Line would be *not cumulatively considerable*.

Tribal Cultural Resources

Aquamarine Solar Project and Gen-Tie Line

The probability that any previously undiscovered tribal cultural resources are present at any of the cumulative project sites is low. However, in the event that buried tribal cultural resources are

encountered during grading or excavation, all of the cumulative projects would be subject to mitigation measures similar to those identified for the Aquamarine Solar Project and Gen-Tie Line in MM CR-1 and MM CR-2 in Section *4.5 Cultural Resources*. The implementation of these measures at each cumulative site would ensure that site-specific impacts to tribal cultural resources would be reduced to less-than-significant levels at each cumulative site. The collective incremental effects after mitigation would result in a less-than-significant cumulative impact to tribal cultural resources, and the project *contribution would not be considerable*.

Utilities and Service Systems

Aquamarine Solar Project

With respect to water supply, each cumulative solar project would require water during construction and operation. The demand for water at each site would be highest during construction for purposes of dust control and soil conditioning. For most cumulative projects, construction water would be supplied by existing agricultural wells. It is estimated that construction water demand for each project would be about 0.2 acre-feet per acre. In the groundwater basin beneath the project site, the safe yield has been determined to be about 0.24 to 0.35 acre-feet per acre per year. Therefore, even if the other cumulative projects in the vicinity were constructed concurrently with the Aquamarine project, and were all constructed in one year or less, the groundwater pumping rate would be within safe yield in each case, such that the cumulative impact of groundwater pumping would be less than significant, and the contribution from the Aquamarine project would be *not cumulatively considerable*.

The operational water supplies for each project would be mainly used for panel washing. As discussed in in section *4.10 Hydrology and Water Quality*, operational water demands for the proposed project are estimated to be approximately 0.02 acre-feet per acre per year, or about 10 percent of the construction water usage rate. Unlike the other cumulative projects, it is expected that the Aquamarine Solar Project's operational demands would be met from imported surface water delivered through Westlands Water District, although there is a possibility that well water may be utilized as backup supply during times of drought when there may be shortages of imported water. Assuming that the cumulative projects in the project's groundwater basin, including the Aquamarine project, all rely solely on well water for operational needs, the cumulative operational water demands of about 0.02 acre-feet per acre per year would be substantially below the safe yield of the aquifer of 0.24 to 0.35 acre-feet per acre per year. Therefore, the cumulative impact to water supplies would be less than significant, and the project *contribution would not be considerable*.

With respect to wastewater treatment, the Aquamarine project and other large-sized cumulative projects would include O&M facilities with septic and leachfield systems for on-site disposal and treatment of domestic wastewater. These wastewater facilities would be subject to Kings County's design and engineering requirements for septic systems, in accordance with their on-site soil and groundwater conditions. This would ensure that wastewater generated at the cumulative project sites would not result in water quality impacts. Therefore, the cumulative impacts with respect to wastewater treatment would be less than significant, and the project *contribution would not be considerable*.

With respect to stormwater drainage, neither the Aquamarine project nor any of the cumulative projects would include the construction or expansion of stormwater drainage facilities. Since over

90 percent of each project site area would be retained in pervious vegetative cover, the ability of each site to absorb and percolate rainwater through the surface soil would not be substantially altered with the addition of the solar facilities. Given also the flat topography and semi-arid conditions at the cumulative sites, the increase in the volume and velocity of stormwater runoff due to the projects would be negligible, so there would be no need to construct storm drainage systems for the projects. Therefore, no cumulative impacts would result from the construction or expansion of storm drainage systems, and the project would make *no contribution* to such impacts.

The total solid waste that would be generated and landfilled by the Aquamarine Solar Project during construction and the operational life of the project would be approximately 3,275 cubic yards (compacted) or 3,036 tons. Since the Aquamarine project represents 11 percent of the total power generation capacity of all of the cumulative projects listed in Table 11, the total cumulative solid waste generation by the cumulative projects would be roughly 9 times the project rate, for a cumulative total of 29,475 cy, or 27,324 tons. This would represent about 0.2 percent of the total remaining landfill capacity at the B-17 Landfill Unit of the Chemical Waste Management, Inc. (CMWI) Kettleman Hills Facility of 15.5 million cy, or the equivalent of 20 days of solid waste disposal at the current daily disposal rate of 1,350 tons at the B-17 Landfill Unit. Thus the total landfilled solid waste generated by the cumulative projects over their lifetimes would shorten the remaining 40-year life of the landfill by about 20 days. Additionally, the combined daily solid waste generation rate by cumulative projects (including Aquamarine) would be about 3.3 tons per day (including construction waste); therefore, the cumulative solid waste generation would not cause the amount of solid waste received at the landfill to exceed the 2,000 ton per day permitted limit. Thus the cumulative impact on solid waste disposal and landfill capacity would be less than significant, and the project *contribution would not be considerable*.

Gen-Tie Line

As discussed in section *4.19 Utilities and Service Systems*, the water supply requirements for the Gen-Tie Line would be very small during construction and negligible during operation. Similarly, wastewater disposal needs during construction would be handled by portable toilets during construction, and would be nil during operation. The Gen-Tie Line would have very minor effects in terms of stormwater runoff during construction, and negligible effects during operation. The solid waste generation would also be very minor during construction and negligible during operation of the Gen-Tie Line. Given the very small effects on utilities and service systems by the Gen-Tie Line, these effects would not combine with the less-than-significant cumulative impacts described above for the Aquamarine project to result in a cumulatively significant impact. Therefore, the cumulative impacts on utilities and service systems would remain less than significant, and the contribution of the Gen-Tie Line would *not be cumulatively considerable*.

Wildfire

Aquamarine Solar Project and Gen-Tie Line

With respect to wildfire, neither the Aquamarine project site, Gen-Tie corridor, nor any of the cumulative projects is located in or near state responsibility areas or on lands classified as very high fire hazard severity zones. As such, the Aquamarine, Gen-Tie and other approved and pending projects would have no cumulative impact under this criterion, and the contribution of the Aquamarine Solar Project and Gen-Tie Line would *not be cumulatively considerable*.

Program-Level Cumulative Impacts Associated with the Westlands Solar Park Master Plan

As discussed in section *2.4 Related Projects*, the Aquamarine Solar Project is located within the Westlands Solar Park (WSP), a master planned solar complex covering approximately 20,938 acres in west-central Kings County. The WSP Master Plan and Gen-Tie Corridors Plan was prepared by the Westlands Water District (WWD) to provide policy guidance for the reuse of retired farmlands owned by WWD, which comprise approximately half of the Master Plan area. In compliance with State CEQA Guidelines Section 15168, the WWD prepared a Program EIR (PEIR) (SCH No. 2013031043) which addressed the potential environmental impacts associated with future solar development under the WSP Master Plan and Gen-Tie Corridors Plan (WWD 2017b). The Draft PEIR also addressed the potential impacts associated with the planned Gen-Tie corridor extending from the WSP to the Gates substation to the west, which is required for the transmission of WSP solar generation to the State electrical grid. On January 16, 2018, the WWD Board of Directors certified the PEIR under CEQA and approved the WSP Master Plan and Gen-Tie Corridors Plan as a WWD policy document.

Since the WSP Master Plan and Gen-Tie Corridors PEIR evaluates the overall impacts resulting from full development of the Westlands Solar Park, it serves as a first-tier CEQA document for this MND, and has been incorporated into this document by reference. The impact analysis in the PEIR provides an evaluation of the cumulative impacts of WSP buildout taken by itself, and also includes and evaluation of the long-term cumulative impacts associated with the WSP buildout combined with other cumulative development. To summarize, the PEIR concluded that the cumulative impacts of solar development under the WSP Master Plan would be less than significant, and also that the combined effects of WSP development combined with the effects of the cumulative projects would be less than cumulatively significant, and that the contribution from each individual future solar project within WSP, and from the WSP as a whole, would *not be considerable*.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Aquamarine Solar Project and Gen-Tie Line

Less-than-Significant Impact with Mitigation Incorporated. The ways in which people can be subject to substantial adverse effects from projects include: potential exposure to significant levels of local air pollutants; potential exposure to seismic and flooding hazards; potential exposure to contamination from hazardous materials; potential exposure to traffic hazards, and; potential exposure to excessive noise levels. The risks from most of these potential hazards would be avoided or reduced to less-than-significant levels through compliance with existing laws, regulations, or requirements that are intended to protect human health and safety. In other instances, the potential impacts to humans would be avoided or reduced to less-than-significant levels through mitigation measures identified in this document. With the implementation of these measures to address potential impacts, it is expected that the Aquamarine Solar Project and Gen-Tie Line would not have the potential to result in significant effects which will cause substantial adverse effects on human beings, either directly or indirectly.

REFERENCES – MANDATORY FINDINGS OF SIGNIFICANCE

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